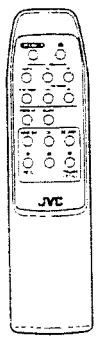
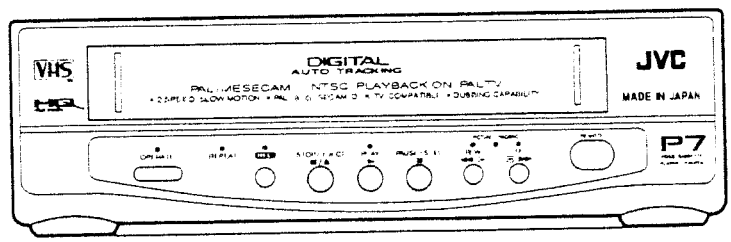
JVC

SERVICE MANUAL

VIDEO CASSETTE PLAYER

HR-P7A





VHS
PAL NTSC4.43

SPECIFICATIONS

Format	VHS Standard (PAL, MESECAM)
Video recording system	Rotary, slant azimuth two-head helical scan system
Rotary heads	2 video heads
RF output	System K/G type modulation UHF ch 30 - 39 variable (preset to channel 36)
Recording (Line input)	PAL,SECAM (MESECAM tape)
Playback (Line output)	PAL,SECAM (MESECAM tape) NTSC 4.43 (NTSC Tape) Simulated PAL (NTSC Tape)
Video	
Line input level	0.5 to 2.0 Vp-p/75 ohms, unbalanced
Line output level	1.0 Vp-p/75 ohms, unbalanced
S/N ratio	43 dB
Horizontal resolution	250 lines
Audio	
Line input level	-6 dBm/50 k ohms, unbalanced
Line output level	-6 dBm/1 k ohms,unbalanced
S/N ratio	More than 40 dB
Frequency response	70 Hz to 10,000 Hz
Playback and recording time	
CCIR	240 min. with E-240 cassette
NTSC	160 min. with T-160 cassette
Tape speed	
CCIR	23.39 mm/sec.
NTSC	33.35 mm/sec.
Shuttle search	
CCIR	Approx. 5 or 9 times normal speed
NTSC	Approx. 5 or 7 times normal speed
FF,REW time	Approx. 5 min. with E-180 cassette
Power requirements	110-240 V AC, 50/60 Hz (Auto Voltage)
Power consumption	16 W
Operating temperature	5 °C to 40 °C
Dimensions	260 (W) × 83 (H) × 334 (D) mm
Weight	4.2 kg

Standard accessories

Remote control unit	× 1
Batteries for remote control	× 2
RF antenna cable	× 1
AC power cord	× 1

Additional standard accessory for Saudi Arabia model

Plug adaptor for power cord	× 1

* For improvement purposes, specifications and design are subject to change without notice.

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The following table lists the differing points between models HR-P7A and HR-P7A(S)

Item \ Model	HR-P7A	*HR-P7A(S)
Plug adaptor for power cord	Not used	Standard accessory

*HR-P7A(S) : for Saudi Arabia model.

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

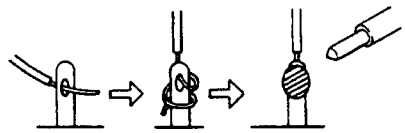

Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

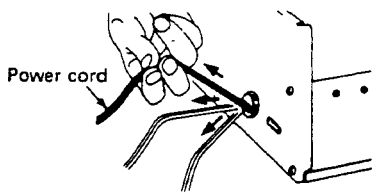

Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.

    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

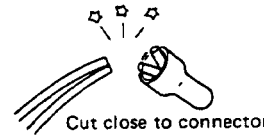

Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

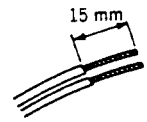

Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

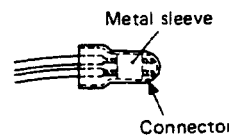

Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

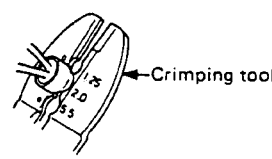

Fig. 6

(5) Check the four points noted in Fig. 7.

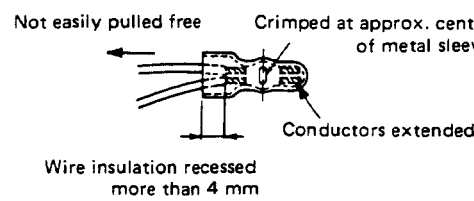
Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

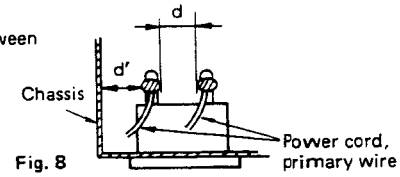

Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts.
   Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

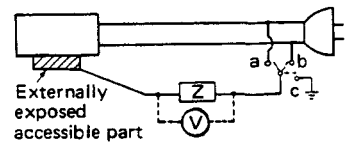

Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

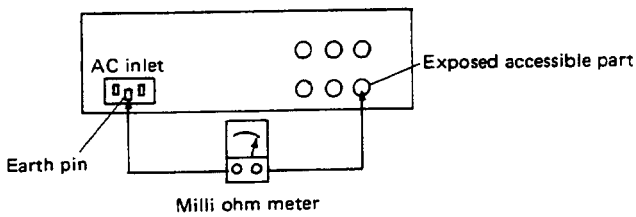

Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	—	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF, 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and location.

INSTRUCTIONS

Table of contents and cautionary notes

This video cassette player is based on the VHS standard system and HQ system and provides both ease of operation and high quality recording and playback capability.
To ensure optimum performance of this unit, please read this operator's manual thoroughly.

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Features

- RF output G/K switchable
- Auto voltage
- 3 system (PAL/MESECAM/NTSC 4.43)
- NTSC playback
- Digital auto tracking
- HQ (High Quality)
- Auto playback
- Slow motion

WAIT!

Moving the video cassette player from a cold place to a warm place will cause dew condensation on the drum and the video heads inside the unit. If playback is carried out in this state, the heads may become dirty and the video cassette tape may be damaged.
To prevent this from occurring, the power plug must be plugged in for about one hour with the OPERATE button off, before playback or recording of a video cassette tape.

The rating plate and the safety caution are on the rear of the unit.

WARNING — DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

This unit is produced to comply with Standard IEC Publ. 65.

POWER SYSTEM
This set operates on voltage of AC110 – 240 V~, 50/60 Hz with automatic switching.

CAUTION

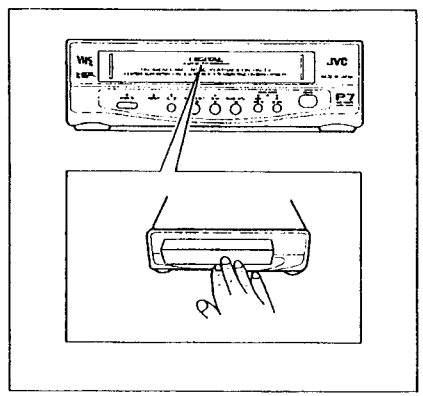
- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

About video cassette tapes

- Only VHS Video Cassette Tapes may be used with this video cassette player.
- Never touch the tape with your fingers.
- Never drop the video cassette tape.
- Never open the video cassette tape case.
- Store standing on end in a well ventilated place, away from objects with strong magnetic fields and away from bright lighting.

Loading and unloading a video cassette tape

Loading a video cassette tape



Follow the markings on the video cassette tape to correctly insert it into the loading compartment, and then give it a little push.

The video cassette tape will be loaded automatically.
The Auto Play system will then automatically start playback of the video cassette player (if the recording defeat tab is removed).

Unloading a video cassette tape

Press the ■/⏏ button.
The loaded video cassette tape will be ejected and the OPERATE indicator will stay lit.

- Press the ■/⏏ button twice to eject a video cassette tape during playback.
- You can eject a loaded video cassette tape when the video cassette player is turned off by pressing the ■/⏏ button.
- The OPERATE indicator will flash on and off during ejection.

Regarding the video cassette player

Avoid using this video cassette player under the following conditions:
- Extremely hot, cold, humid or dusty places.
- Near appliances generating strong magnetic fields.
- Places poorly ventilated or subject to vibration.

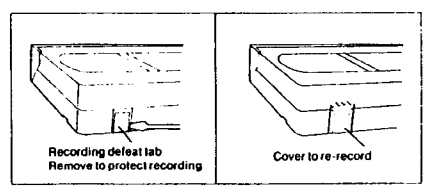
Be careful of moisture condensation:
- Avoid using this video cassette player immediately after moving it from a cold to a warm place or just after heating a room. Water vapour may condense on the video head drum and tape guides causing damage to the tape and the unit.

Handle carefully:
- Do not block the ventilation openings or place anything heavy or that might spill on top of this video cassette player. Prevent dust accumulation on this video cassette player and use the unit in the horizontal position only.

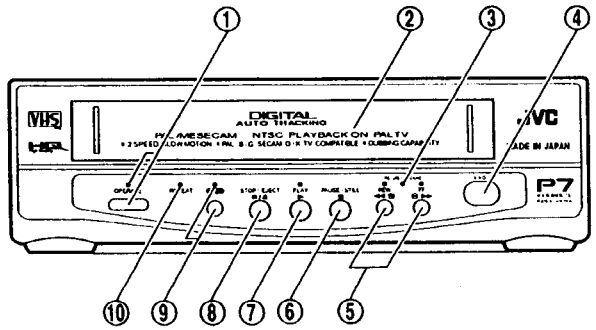
In case of transportation:
- Avoid violent shocks to this video cassette player during packing and transportation.
- Before packing, remove the video cassette tape from this video cassette player.

The recording defeat tab

This video cassette player has a built-in recording prevention system.
In order to prevent accidental recording over a pre-recorded tape, remove the video cassette tape's recording defeat tab. During playback the recording prevention system will be activated and recording will be impossible. After playback, the video cassette tape will be ejected automatically.
If you wish to record over the pre-recorded video cassette tape again, cover the hole with adhesive tape.



Controls



① **OPERATE button and indicator**
To turn the power on and off (standby mode).
The red indicator will light when the video cassette player is in the standby mode and the green indicator will light when the power is turned on.

② **Cassette loading compartment and door**
Load the video cassette tape here.

③ **PICTURE/TRACKING indicator**
Tells you that the tracking control or the picture sharpness control is set to the initial position during tracking adjustment or picture sharpness adjustment.

④ **REMOTE sensor**
For remote control operation.

⑤ **FF (Fast forward) ⊖ ▶▶ /REW (Rewind) ◀◀ ⊖ buttons and indicators**
To fast forward or rewind the video tape. Also to start forward or reverse quick finder operation and for colour system selection.

⑥ **PAUSE/STILL ▮▮ button**
To freeze the playback picture during playback, and to temporarily stop the recording operation.

⑦ **PLAY ▶ button and indicator**
To start playback.

⑧ **STOP/EJECT ■/⏏ button**
To stop the video cassette player and eject the video cassette tape.

⑨ **REC button and indicator**
To start recording.

⑩ **REPEAT indicator**
Tells you repeat playback is engaged.

Convenient features

Auto Power On System

When a video cassette tape is loaded into the cassette loading compartment, the power will be turned on automatically with the Auto Power On System.

- Check to make sure that a video cassette tape is not already loaded before inserting the video cassette tape.

Auto Tape Reject System

If a video cassette tape with its recording defeat tab removed is loaded, the video cassette player will automatically eject it when the REC button is pressed.

Auto Playback System

Once the video cassette tape is fully inserted into the cassette loading compartment, the video cassette player will start playback automatically.

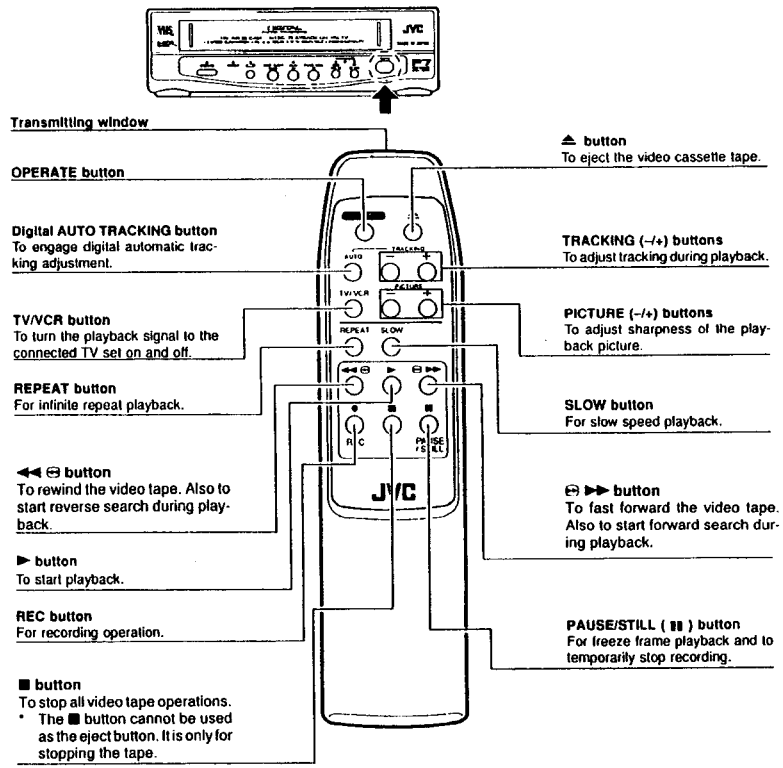
If the recording defeat tab has not been removed, the Auto play system will not work. The video cassette player stays in the stop mode after the video cassette tape is loaded.

Note:
When the power plug is first plugged in, and before the power button is pressed to turn the video cassette player's power on, inserting a fully rewound tape will not engage the auto play function. In this case press the play button to start playback.

Power Off Eject System

Even when the video cassette player's power is turned off, a loaded video cassette tape can be ejected by pressing the ■/⏏ button. The power will be turned on and the video cassette tape ejected. After the video cassette tape is ejected the power will be automatically turned off again.

Remote control unit

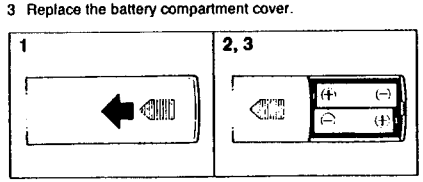

Transmitting window
OPERATE button
Digital AUTO TRACKING button
To engage digital automatic tracking adjustment.
TV/VCR button
To turn the playback signal to the connected TV set on and off.
REPEAT button
For infinite repeat playback.
◀◀ ⊖ button
To rewind the video tape. Also to start reverse search during playback.
▶ button
To start playback.
REC button
For recording operation.
■ button
To stop all video tape operations.
• The ■ button cannot be used as the eject button. It is only for stopping the tape.
⏏ button
To eject the video cassette tape.
TRACKING (-/+) buttons
To adjust tracking during playback.
PICTURE (-/+) buttons
To adjust sharpness of the playback picture.
SLOW button
For slow speed playback.
⊖ ▶▶ button
To fast forward the video tape. Also to start forward search during playback.
PAUSE/STILL (▮▮) button
For freeze frame playback and to temporarily stop recording.

How to load the batteries

1 Slide back the battery compartment cover in the direction of the arrow.

2 Load two SUM-3, AA, IEC R6 or equivalent size batteries observing the correct polarities (refer to the illustration).

3 Replace the battery compartment cover.



Operation

Point the remote control unit at the REMOTE sensor window, and press the desired operation button.

If the remote control unit will only operate from a short distance or narrow angle, this indicates that the battery voltage is low. Replace all the batteries with new ones.
When replacing the batteries, clean all the remote control and battery terminals with a dry cloth.

Cautionary notes

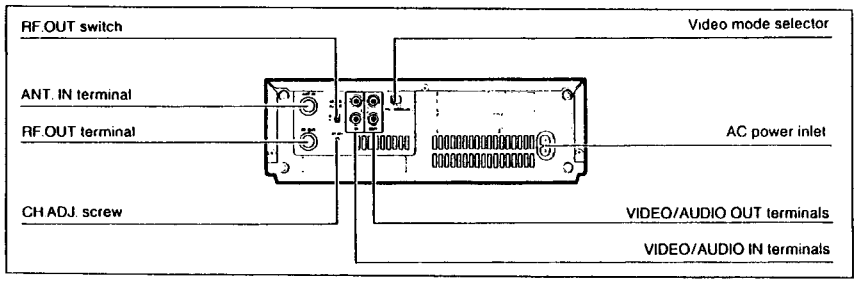
The remote control unit

- Avoid dropping the remote control unit or getting it wet.
- Avoid exposing the remote control unit to direct sunlight or strong light as this may cause malfunction.

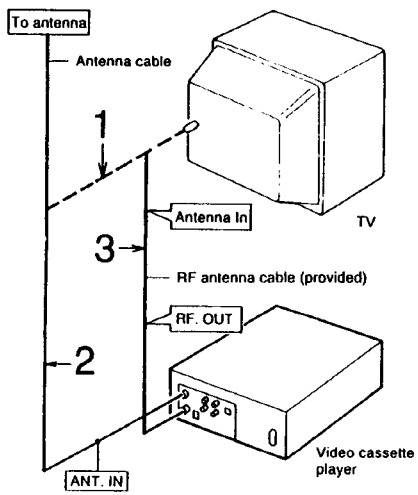
The dry batteries

- Insert the batteries with the polarity guides (- and +) positioned correctly.
- When you do not plan to use the remote control unit for a long period of time, remove the batteries.
- When replacing the batteries, replace them all at the same time. Do not mix an old battery with a new one.
- Do not use re-chargeable batteries.

Connections



In order to use the video cassette player it must be connected between the antenna and the TV. Turn off the TV before connecting.



1 Disconnect the antenna cable from your TV.

2 Plug the antenna cable into the video cassette player's ANT. IN jack.

3 Plug one end of the provided RF antenna cable into the video cassette player's RF. OUT jack, and the other end into the TV's ANT. IN jack.

4 **AC power supply:** After connecting the AC power cord to the AC power inlet, connect the power cord to your household AC outlet.

RF.OUT switch

The RF.OUT switch should be set as follows.

K position: Set to this position for K system areas (East European countries).

G position: Set to this position for Middle East SECAM (SECAM system B/G) colour system playback.

Video mode selector

The video mode selector is used to select the type of signal to be played back.

PAL Set to this position for PAL colour system playback.

MESECAM *Set to this position for Middle East SECAM* (SECAM system B/G) colour system playback.

Colour system output mode selection

Once the video cassette player's power cord is plugged in the red power indicator will light and the REW ◀◀ indicator will flash. At this point the unit can be set to the NTSC → PAL colour system output mode or the NTSC 4.43 colour system output mode.
Select the NTSC → PAL mode for viewing NTSC or PAL/MESECAM video tapes on a PAL system TV.
Select the NTSC 4.43 mode for viewing NTSC tapes on a multi-system TV that includes the NTSC 4.43 mode.

Setting the unit to the NTSC → PAL mode:

1 **Plug the power cord in.**
The red power indicator will light and the REW ◀◀ indicator will flash.

2 **Press the OPERATE button to turn the power on.**
The unit is now set to the NTSC → PAL mode.

Setting the unit to the NTSC 4.43 mode:

1 **Plug the power cord in.**
The red power indicator will light and the REW ◀◀ indicator will flash.

2 **Press the FF ▶▶ button.**
The FF ▶▶ indicator will flash.

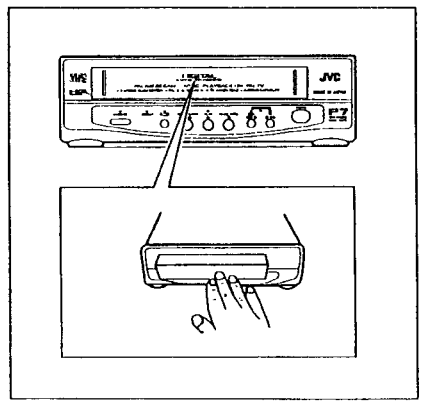
3 **Press the OPERATE button to turn the power on.**
The unit is now set to the NTSC 4.43 mode.

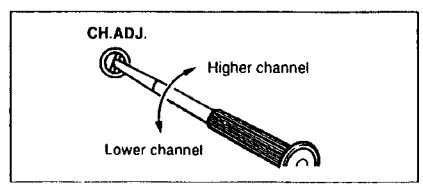
Note:

- If you have made a mistake or wish to change the colour system mode, first unplug the power cord and repeat the appropriate setting procedure.
- The selected colour system mode is retained in the memory until the power cord is unplugged. Power failure will also cancel the colour system.

Setting the TV to the video channel

The TV must have one of its channels set to receive the signal from the video cassette player. This is the video channel.





1 **Turn the video cassette player's power on and load a prerecorded video tape.**

2 **Turn on the TV and set it to UHF channel 36.**

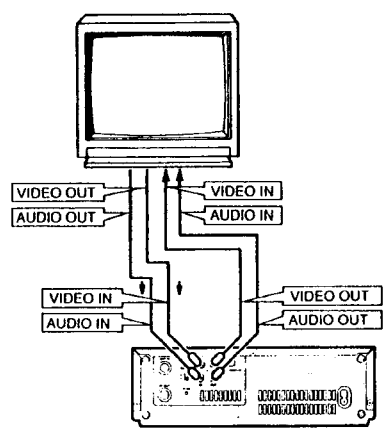
If UHF channel 36 is being used for broadcasting in your area:
Adjust the TV's channel selector a little at a time until the TV screen is blank (set it towards a higher or lower channel). Adjust the CH.ADJ. screw on the rear panel of the video cassette player a little at a time until the playback picture appears on the TV screen.

- If the TV's channel selector was set to a higher channel than channel 36, turn the CH.ADJ. screw to the right and vice versa.

3 **Adjust the TV picture with the TV's tuning controls.**

TV viewing while the video cassette player is connected.

To watch a normal TV broadcast, turn off the OPERATE button of the video cassette player and select a TV station with the TV's channel selector. However, **do not unplug the power cord** of the video cassette player. TV reception will not be possible if the video cassette player is unplugged.



Connecting a monitor type TV

When the VIDEO IN/OUT jack are used for monitor TV connections, you can enjoy recording and playback of TV programmes with this video cassette player.

Connections

Connect the VIDEO IN and VIDEO OUT jacks of the monitor TV to the VIDEO IN and OUT jacks of the video cassette player with video connection cords. Then connect the AUDIO IN and AUDIO OUT jacks of the monitor TV to the AUDIO IN and OUT jacks of the video cassette player with audio connection cords.

- Audio and video connection cords are available in Hi-Fi stores.

Before playback

Set the input selector of the TV to the Video (or external) position.

Before recording a TV program

Select the TV program you wish to record with the TV's channel selector.

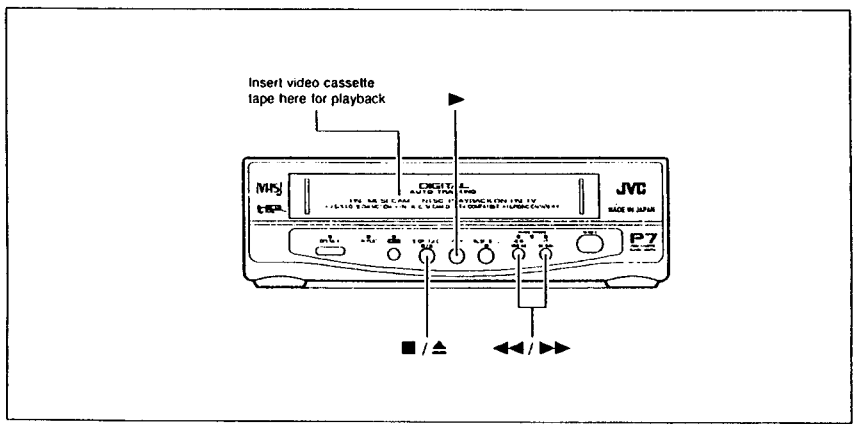
Pre-recorded tape playback

This system enables you to watch PAL, NTSC or MESECAM video tapes on a PAL or multi-system TV (with NTSC 4.43 system).

Before proceeding

- Turn on the TV and video cassette player.
- Make sure that the TV is set to the video channel or that the TV's TV/VCR switch is set for the video cassette player. (Refer to the "Setting the TV to the video channel" section for details.)

Note:
- This video cassette player can only play back video cassette tapes recorded in SP (standard play) speed.
- When playing back MESECAM tapes (tapes recorded in the Middle East area), set the video mode selector switch (on the rear panel) to the MESECAM position. (Refer to the "Connections" section for details.)
- Make sure that the video cassette player is set to the correct colour system mode. (Refer to the "Connections" section.)



Operation

1 Load a pre-recorded video tape.
If the video tape's recording defeat tab has been removed, playback will begin automatically.

2 Press the ▶ button to start playback.
The recorded colour system (PAL/MESECAM or NTSC) will be selected automatically.

Note:
In case the correct selection is not made (because of poor recording etc.), press the ▶ button for approximately 1 second until the correct picture is played back. (Each time the ▶ button is pressed it sets the video cassette player to PAL/MESECAM or NTSC alternately.)

3 Press the ■/≙ button to stop playback.

To eject the video cassette tape

Press the ■/≙ button twice to eject a tape during the playback mode. The video cassette player will stop, then eject the video cassette tape.

* If the video cassette player is already in the stop mode, press the ■/≙ button once to eject the tape.

When using a PAL TV to watch playback of an NTSC tape.

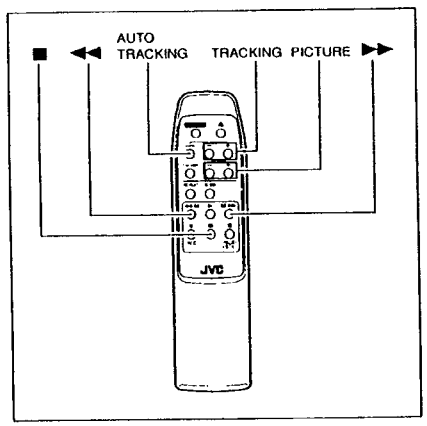
- The vertical size of the playback picture will shrink and some picture "noise" may appear on the screen.
- The playback picture may roll. In this case adjust the picture with the TV's vertical hold knob (with some TVs this adjustment may not be possible).
- The colour of the playback picture may differ from the original.
- In the cue, review and still modes there may be no colour depending on the combination of TV and video cassette player.

Note:
- If the video tape ends during playback the video cassette player will stop and rewind the tape automatically.

To quickly rewind or forward the video cassette tape

Press the ◀◀ or ▶▶ button during the stop mode.
To quickly rewind the tape ..... Press the ◀◀ button.
To quickly advance the tape ..... Press the ▶▶ button.
The indicator ◀◀ or ▶▶ will light.

Note
- When the video cassette player is in the playback mode, press the ■/≙ button before winding the video cassette tape. The ▶▶ and ◀◀ buttons have two functions. From the **play** mode, they function as the shuttle search control (Refer to page 10; shuttle search playback). From the **stop** mode, they function as normal Fast Forward and Rewind.
- The picture is not visible during Fast Forward or Rewind.



Tracking adjustment

Although tracking is adjusted each time a video tape is inserted in the video cassette player, you may wish to adjust tracking manually during playback. There are two tracking adjustment modes: manual and auto.

Manual tracking ajustment

Press the remote control's – or + TRACKING button. The ▶▶ or ◀◀ indicator will blink each time the – or + TRACKING button is pressed and then remain lit for a few seconds when the maximum tracking position in that direction has been reached.
The PICTURE/TRACKING indicator lights to indicate the reference tracking position.

Digital auto tracking adjustment

Press the remote control's digital AUTO TRACKING button. The play indicator will flash while auto tracking is being adjusted and stop flashing when auto tracking is complete.

Note:
- Tracking may need to be adjusted each time a different video tape is inserted for playback.
- Tracking adjustment is ineffective during recording.
- Tracking will be reset to the reference position when the video tape is ejected.

Picture adjustment

Picture sharpness can be adjusted anytime during playback.

Press the remote control's + or – PICTURE button repeatedly.
To sharpen the picture ..... Press the + button.
To soften the picture ..... Press the – button.
The ▶▶ or ◀◀ indicator will blink each time the + or – PICTURE button is pressed and then remain lit for a few seconds when the maximum sharpness or softness adjustment position has been reached. The PICTURE/TRACKING indicator lights to indicate the reference adjustment position.

Note:
- Picture adjustment will not function during the still mode.
- Picture sharpness will be automatically set to the reference position when the power plug is disconnected.

Special features of the video cassette player

1 Shuttle search playback

Press the ◀◀ or ▶▶ button during playback to visually locate any point on a recorded video cassette tape.
The video cassette player will go into the shuttle search playback mode and the sound will be cut.
The indicators ▶ and ◀◀ or ▶▶ will light.

To engage fast shuttle search
Press the ◀◀ or ▶▶ button again.
Repeatedly press the ◀◀ or ▶▶ button to alternate between the normal and fast shuttle search speed.

To resume normal speed playback
Press the ▶ button.
The video cassette player will go back into the normal speed playback mode and the sound will return.

Note:
- When the video cassette player is in the stop mode, press the ▶ button to start playback before using the shuttle search.
- There will be disturbances in the picture during shuttle search operation. This is normal and does not indicate a problem with the video cassette player.

2 Slow speed playback

For slow speed playback, press the SLOW button on the remote control unit. The ▶ indicator will flash on and off quickly, and the video cassette player will go into the slow speed (1/16 of normal speed) playback mode. During slow speed playback no sound will be heard.

To increase the playback speed
Press the SLOW button once again. Playback speed will further increase to 1/8 of normal playback speed.
* If you press the SLOW button once again, the playback speed will return to 1/16 of the normal playback speed.

To resume normal playback
Press the ▶ button. The ▶ indicator will stay lit, the video cassette player will return to the normal playback mode, and the sound will return.

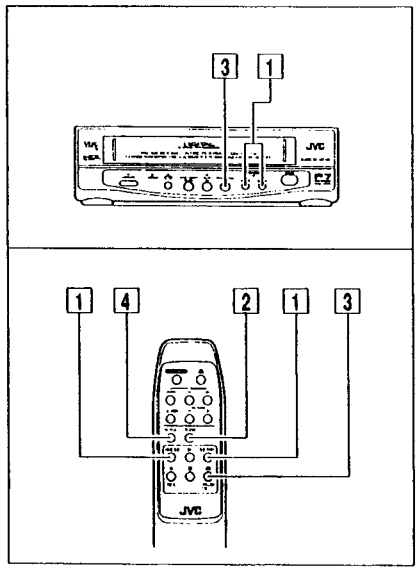
Note:
- There will be some picture disturbance and loss of colour during playback.

3 Picture freeze and frame advance during playback

Press the PAUSE/STILL (❚❚) button during playback to freeze the picture.
The ▶ indicator will flash on and off slowly, and the playback picture will be frozen. The sound will be cut during the still mode.

Press the PAUSE/STILL (❚❚) button repeatedly to advance frames. Each time the button is pressed the still picture will advance one frame.

To resume normal playback
Press the ▶ button.
The ▶ indicator will stay lit, the video cassette player will go into the normal playback mode and the sound will return.



4 Infinite repeat playback

Press the REPEAT button on the remote control for infinite repeat playback of a video cassette tape.
The REPEAT indicator will light and the video cassette player will go into the repeat playback mode.

To stop the repeat playback mode
Press the ■/⏏ button.
During the infinite repeat playback mode the video cassette tape is rewound and repeated everytime it reaches the end.

To cancel repeat playback
Press the REPEAT button once again. The REPEAT indicator will go off.
* The repeat function will not be cancelled when the ■/⏏ button or OPERATE button is pressed.

5 Recording

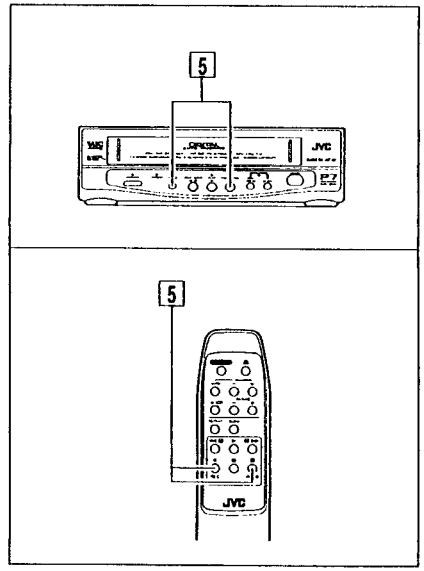
To begin recording keep the REC button depressed for at least 1 second. The recording indicator will light, and the video cassette player will go into the recording mode.

To stop recording temporarily
Press the PAUSE/STILL (❚❚) button. The REC indicator will flash on and off, and the video cassette player will go into the recording standby mode.

To resume recording
Press the REC button again. The REC indicator will stay lit, and the video cassette player will return to the recording mode.

To stop recording
Press the ■/⏏ button.

Note:
- For recording standby, press the PAUSE/STILL (❚❚) button before pressing the REC button. The video cassette player will go into the recording standby mode and the recording indicator will flash on and off. To start recording press the REC button once again.
- If the recording defeat tab is broken, the video cassette tape will be ejected automatically when the REC button is pressed.
- The video cassette tape will be rewound automatically when the end of the tape is reached.



Video dubbing

The VIDEO and AUDIO IN/OUT jacks allow you to easily use this video cassette player to record from/to another video cassette recorder.

Note:
When dubbing NTSC tapes with this video cassette player, set the video cassette player's colour system output mode to the NTSC 4.43 position (refer to connection details) and use an NTSC system video cassette recorder as the recording side deck. (Only use this video cassette player for playback.)
The dubbed tape will be in black and white.

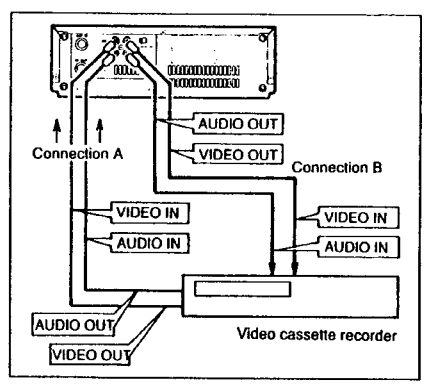
1 Connect the video cassette player to the video cassette recorder as shown.

2 Turn on both units and the TV. Put the source video cassette tape in the playback unit and a blank tape into the recording side unit.

3 Press the ▶ button of the playback unit, and the recording button of the recording side unit to start dubbing.

Connection A:
To record from another video cassette recorder to this video cassette player.

Connection B:
To record from this video cassette player to another video cassette recorder.



Troubleshooting

Problem	Check point
No power	Power cord plugged in? OPERATE button turned on?
Eject operation will not take place	Was the video cassette player's ■/⏏ button pressed?
No picture	TV set to video channel? Tape loaded? Connections correct? TV/VCR button set to VCR?
No colour	Set the video mode switch according to recorded tape system.
Shuttle search will not function	Is the video cassette player in playback mode?
Disturbances in playback picture	Tracking adjusted properly? TV adjusted properly?
Remote control operation will not take place	The batteries are weak.
Auto play will not take place	Recording defeat tab is not broken.
Recording will not take place	Connections are correct? REC button is pressed? Recording defeat tab is broken.
The video cassette player will not function properly	Microcomputer malfunction. Pull out the power plug from the AC outlet and then re-insert it. The microcomputer will be reset to its initial mode.

Final Notes

- Poorly recorded, poor quality, or old video cassette tapes may show a loss of colour even after adjustment with the TRACKING control.
- When a dirty video cassette tape is used, dirt will accumulate on the video heads. This will cause disturbances on the TV screen which cannot be eliminated with the video cassette player's tracking control or the TV's fine tuning control. If this should occur, the heads as well as other internal parts must be cleaned. As this equipment is a finely precisioned instrument, never open it yourself. Take it to a qualified service shop or to an authorized service station to be cleaned.

Should a problem persist, write down the model and serial number and all pertinent data regarding warranty coverage as well as a clear description of the existing trouble. Then contact your nearest authorized JVC service station.

Specifications

Format ..... VHS Standard (PAL, MESECAM)
Video recording system ..... Rotary, slant azimuth two-head helical scan system
Rotary heads ..... 2 video heads
RF output ..... System K/G type modulation
UHF ch 30 - 39 variable
(preset to channel 36)
Recording (Line input) ..... PAL,SECAM (MESECAM tape)
Playback (Line output) ..... PAL,SECAM (MESECAM tape)
NTSC 4.43 (NTSC Tape)
Simulated PAL (NTSC Tape)
Video
Line input level ..... 0.5 to 2.0 Vp-p/75 ohms, unbalanced
Line output level ..... 1.0 Vp-p/75 ohms, unbalanced
S/N ratio ..... 43 dB
Horizontal resolution ..... 250 lines
Audio
Line input level ..... -6 dBm/50 k ohms, unbalanced
Line output level ..... -6 dBm/1 k ohms,unbalanced
S/N ratio ..... More than 40 dB
Frequency response ..... 70 Hz to 10,000 Hz
Playback and recording time
CCIR ..... 240 min. with E-240 cassette
NTSC ..... 160 min. with T-160 cassette
Tape speed
CCIR ..... 23.39 mm/sec.
NTSC ..... 33.35 mm/sec.
Shuttle search
CCIR ..... Approx. 5 or 9 times normal speed
NTSC ..... Approx. 5 or 7 times normal speed
FF,REW time ..... Approx. 5 min. with E-180 cassette
Power requirements ..... 110-240 V AC, 50/60 Hz (Auto Voltage)
Power consumption ..... 16 W
Operating temperature ..... 5 °C to 40 °C
Dimensions ..... 260 (W) × 83 (H) × 334 (D) mm
Weight ..... 4.2 kg

Standard accessories
Remote control unit ..... × 1
Batteries for remote control ..... × 2
RF antenna cable ..... × 1
AC power cord ..... × 1

Additional standard accessory for Saudi Arabia model
Plug adaptor for power cord ..... × 1

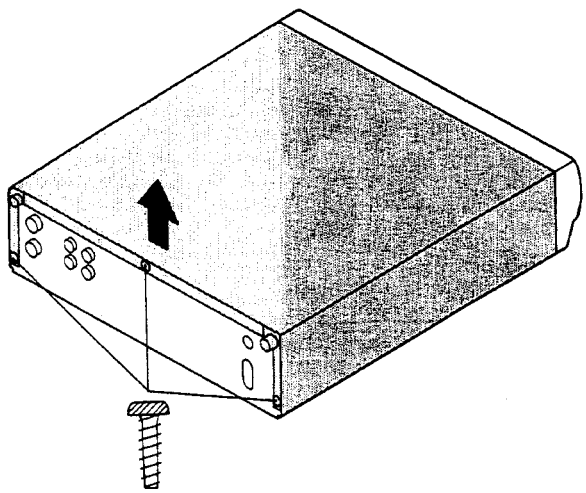
* For improvement purposes, specifications and design are subject to change without notice.

SECTION 1
DISASSEMBLY AND MECHANISM ADJUSTMENTS

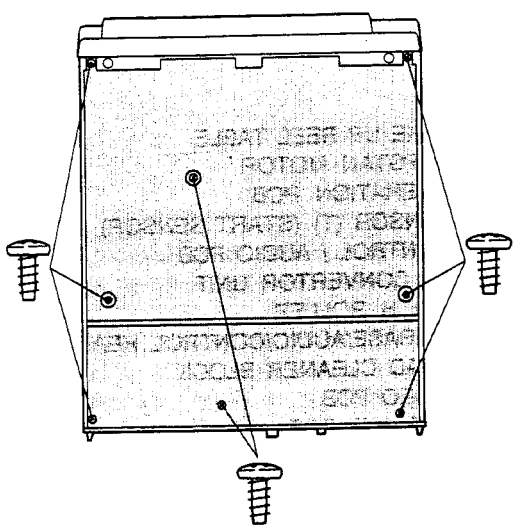
1. DISASSEMBLY

In case of trouble, etc. necessitating dismantling, please dismantle in the order shown in the illustrations.
Reassemble in the reverse order.
When reattaching the FRONT PANEL, hold the cassette loading slot door in the upright (open) position.

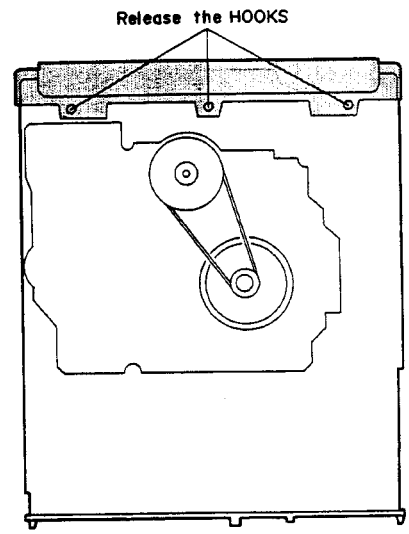
1. Removal of UPPER COVER



2. Removal of BOTTOM COVER



3. Removal of FRONT PANEL



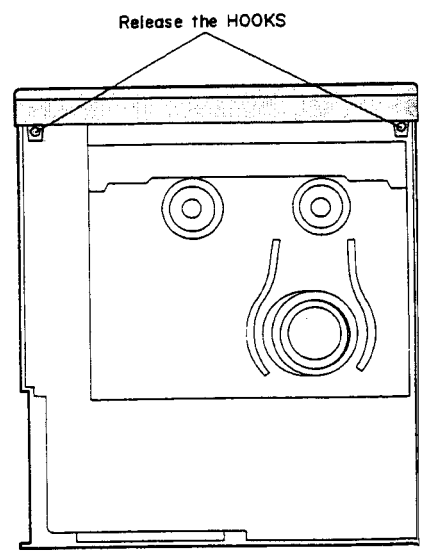


Fig. 1-1 Disassembly

2. PRINCIPAL PARTS LOCATION

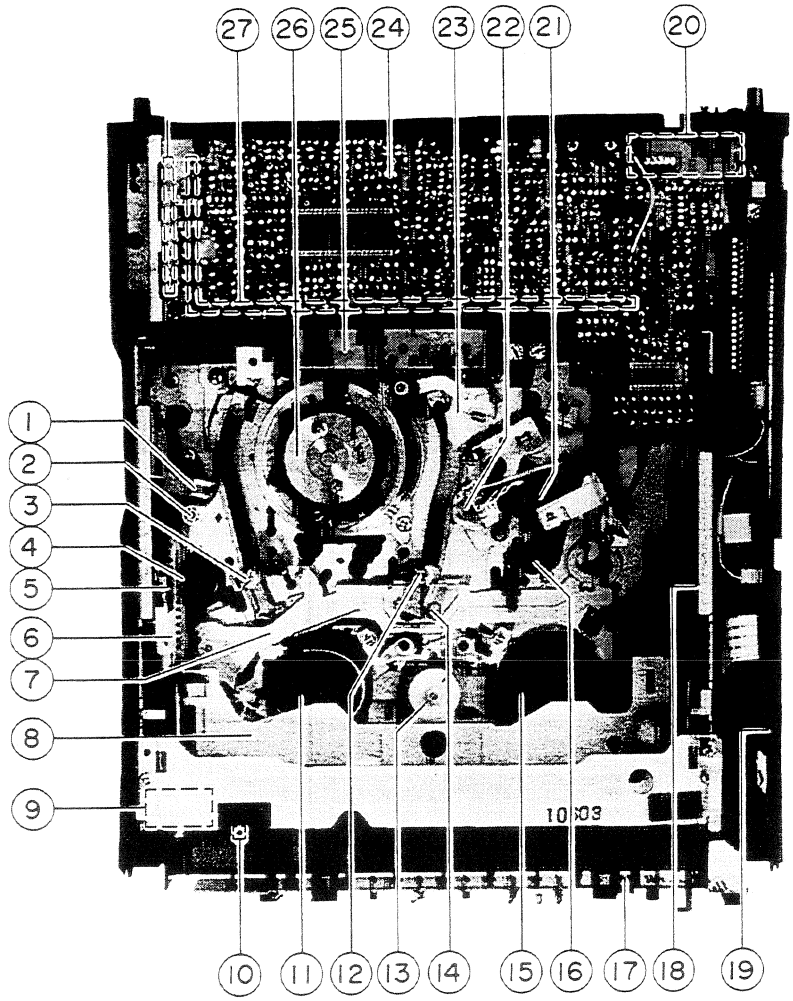


Fig. 2-1 Top view

1. FULL TRACK ERASE HEAD
2. SUPPLY TAPE GUIDE
3. SUPPLY LOADING LEADER
4. FRONT LOADING GEAR
5. SENSOR (S) PCB (END SENSOR)
6. FRONT LOADING SLIDER
7. TENSION ARM
8. CASSETTE LOAD BLK
9. LOADING MOTOR
10. REC SAFETY SWITCH
11. SUPPLY REEL TABLE
12. TAKE UP LOADING LEADER
13. IDLER PART
14. SENSOR LED
15. TAKE UP REEL TABLE
16. CAPSTAN MOTOR
17. OPERATION PCB
18. SENSOR (T) (START SENSOR)
19. CONTROL / AUDIO PCB
20. RF CONVERTOR UNIT
21. PINCH ROLLER
22. S.ERASE/AUDIO/CONTROL HEAD
23. HEAD CLEANER BLOCK
24. VIDEO PCB
25. PRE AMP PCB
26. VIDEO HEAD DRUM BLOCK
27. POWER SUPPLY PCB

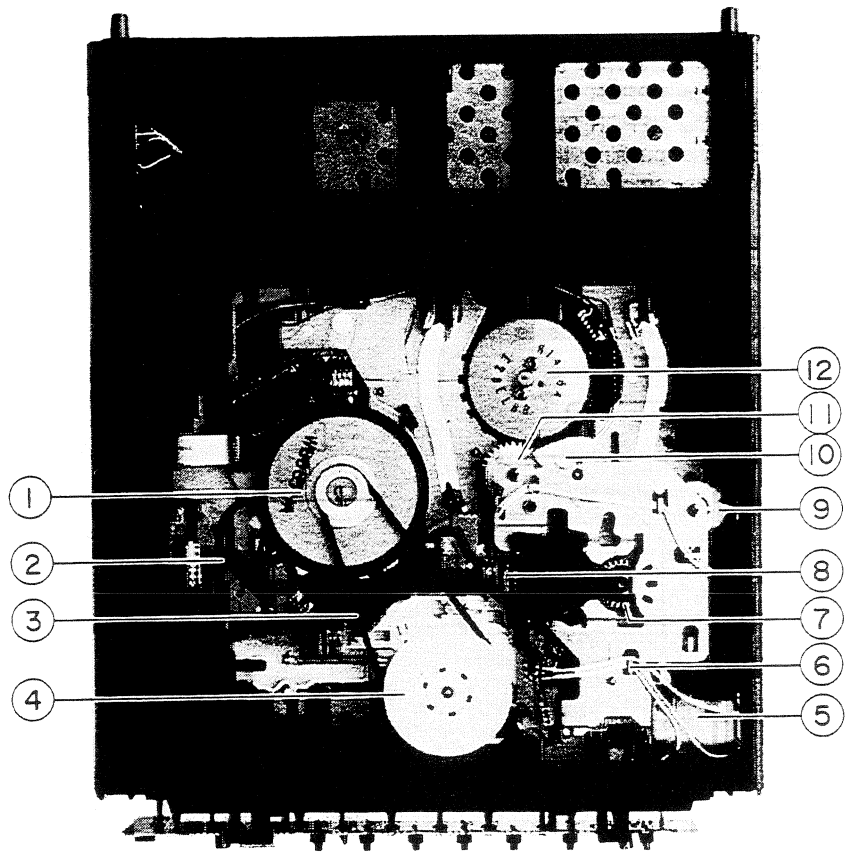


Fig. 2-2 Bottom view

1. CAPSTAN MOTOR BLOCK
2. SENSOR PCB
3. CAPSTAN BELT
4. CLUTCH DISK PART
5. LOADING MOTOR
6. LOADING DRIVE BLOCK
7. CAM SLIDER GEAR
8. MODE SELECT SWITCH
9. FRONT LOADING GEAR
10. TOGGLE (S) GEAR BLOCK
11. TOGGLE (T) GEAR BLOCK
12. DRUM MOTOR BLOCK

3. MAIN COMPONENTS REPLACEMENT

3-1. REMOVAL OF THE EJECTOR BLOCK

* Set the loading mechanism to the "EJECT" position by pressing the EJECT button. Then disconnect the AC power plug from the AC socket before proceeding.

3-1-1. Removal of the CASSETTE LOAD BLK

1) Remove the two Ⓐ screws on the UPPER PLATE as shown in Fig. 3-1 then remove the UPPER PLATE.
2) Lift up the FRONT GUIDE while pushing the CASSETTE LOAD BLK backward, then remove the FRONT GUIDE.
3) Lift up the front side of the CASSETTE LOAD BLK gently then remove it. To avoid damaging the pins of the CASSETTE LOAD BLK and the groove of the MECHA. FRAME, do not add excessive force to the CASSETTE LOAD BLK when removing it.

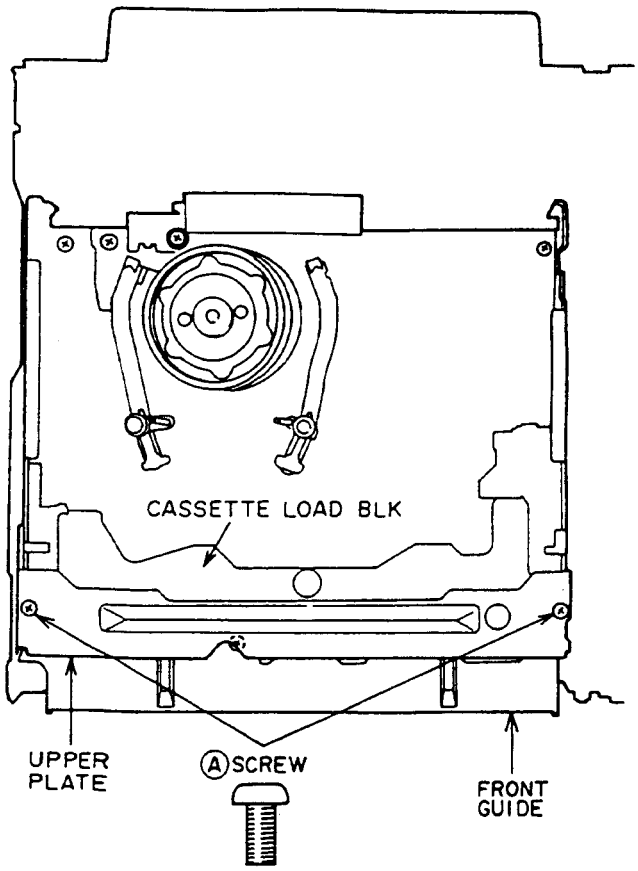


Fig. 3-1

3-1-2. Removal of the LOADING ARM BLK

1) Release the stopper on the right side end of the LOADING ARM BLK's shaft (Refer Fig. 3-2) by pressing the stopper tab with a flat head (—) screwdriver. Then remove the shaft's right end from the bracket.

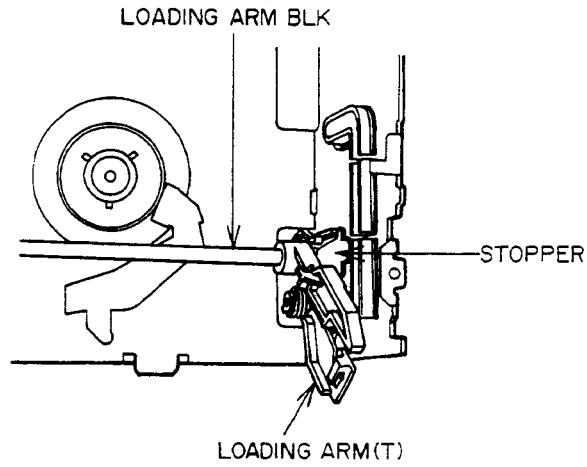


Fig. 3-2

2) Hold the LOADING ARM (T) and turn it 30 degrees clockwise, then pull out the shaft's left end from the bracket. To avoid damaging the JOINT GEAR and EJECT GEAR, take special care when removing. (Refer Fig. 3-3)

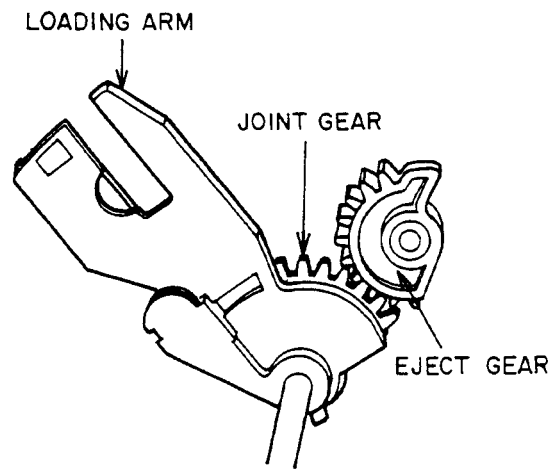


Fig. 3-3

3-2. REMOVAL OF THE SENSOR PC BOARD

* Before proceeding with removal of the SENSOR PCB the loading mechanism must be set to the "unloaded" position (the position where the CAM SLIDER GEAR's groove mark is visible through the hole of the MODE SELECT SW.) as shown in Fig. 3-4.

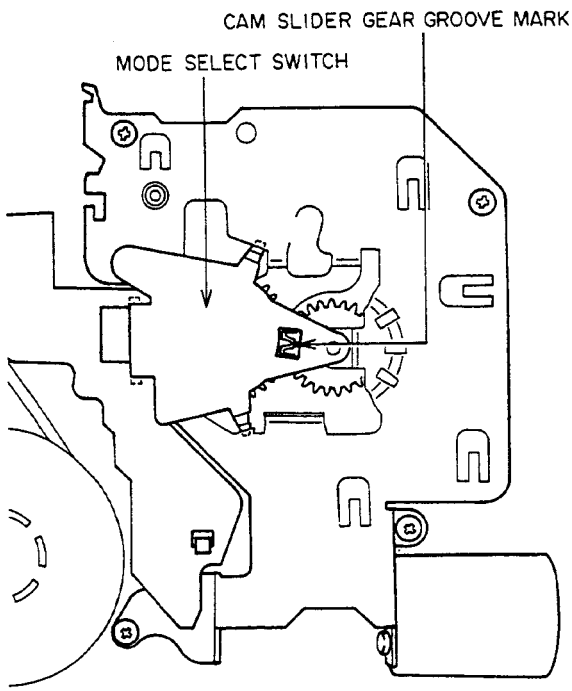


Fig. 3-4

To set the loading mechanism to the "unloaded" position, proceed with one of the following 1) or 2) procedures.

1) Insert a video cassette tape which you no longer need. Once the tape has been loaded or has entered the "play" mode press the POWER button to turn the power off. Disconnect the AC power plug from the AC socket after the cassette tape has been unloaded.
2) Remove the UPPER PLATE, FRONT GUIDE and CASSETTE LOAD BLK. (Refer to 3-1-1. Removal of the CASSETTE LOAD BLK.)
   Plug in the AC power cord. The LOADING ARM BLK will move backward (the cassette load BLK will be in the down position) and forward (the cassette load BLK will be in the eject position) continuously.
   With your fingers, cover and hold both SENSOR (S) and SENSOR (T) at the same time when the LOADING ARM BLK is in the backward position. The unit will enter the "play" mode without the cassette tape.
   While covering both sensors, press the "POWER" button. The unit will now enter the "tape unloaded" position. Release your fingers from the sensors, and disconnect the AC power plug from the AC power socket.

3-2-1. Removal of the MODE SELECT SWITCH

1) Release the two Ⓐ stoppers as shown in Fig. 3-5.

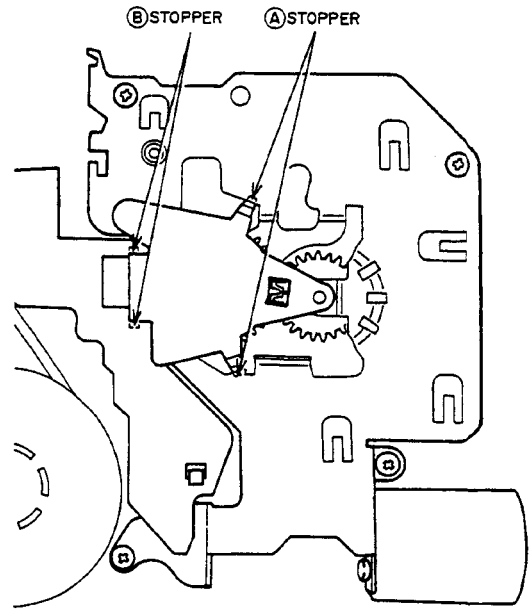


Fig. 3-5

2) Release the two Ⓑ stoppers carefully while pulling up the MODE SELECT SWITCH. Then remove the MODE SELECT SWITCH. (Do not damage the pins of the MODE SELECT SWITCH or the connector P1 on the SENSOR PCB).

3-2-2. Removal of the SENSOR PC Board

1) Disconnect the connector P404 on the CONTROL/AUDIO PCB.
2) Remove the capstan belt.
3) Release the Ⓐ, Ⓑ and Ⓒ stoppers as shown in Fig. 3-6. Then remove the SENSOR PCB.

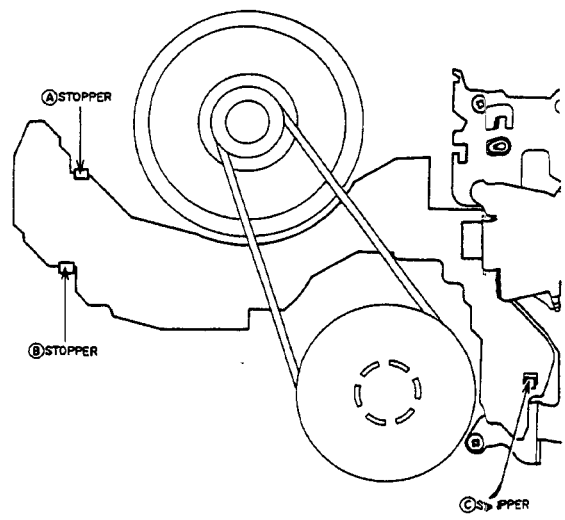


Fig. 3-6

3-3.REMOVAL OF THE LOADING DRIVE BLK

Set the loading mechanism at the "unloaded" position as well as 3-2 (REMOVAL OF THE SENSOR PC BOARD). However this time, to avoid damaging the tape and mechanical parts, refer to 3-2, *(2) only.

1) Remove the MODE SELECT SWITCH in the same manner as 3-2-1 (Removal of the MODE SELECT SWITCH).
2) Unhook the five wires from each tab. Two wires from the SENSOR (S), two wires from the LOADING MOTOR and one wire from the REC SAFETY SWITCH.
3) Remove the Ⓐ, Ⓑ, Ⓒ and Ⓓ screws, then remove the LOADING DRIVE BLK as shown in Fig. 3-7.

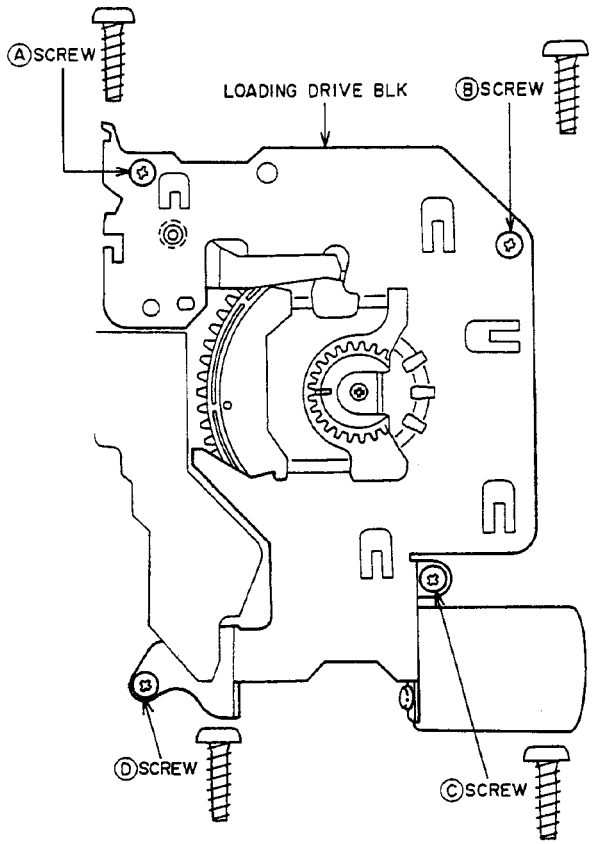


Fig. 3-7

3-4.REASSEMBLY OF THE LOADING MECHANISM BLK

3-4-1. Position of the TOGGLE GEARs (T) and (S)

1) Set the TOGGLE GEAR (T) and TOGGLE GEAR (S) to the unloaded position with your fingers. Align the Ⓐ mark on the TOGGLE GEAR (S) with the Ⓐ hole of the TOGGLE GEAR (T) as shown in Fig. 3-8.

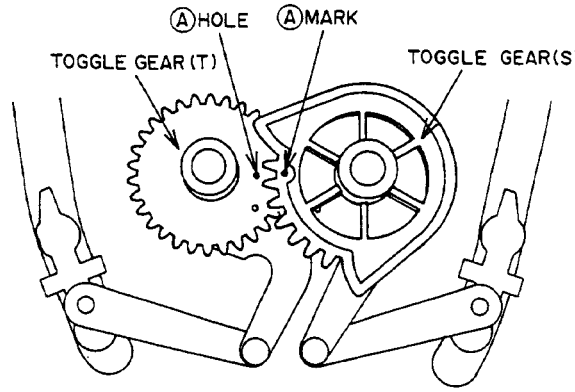


Fig. 3-8

3-4-2. Installation of the CAM SLIDER GEAR & FRONT LOADING GEAR

1) Attach the WORM WHEEL GEAR as shown in Fig. 3-9.

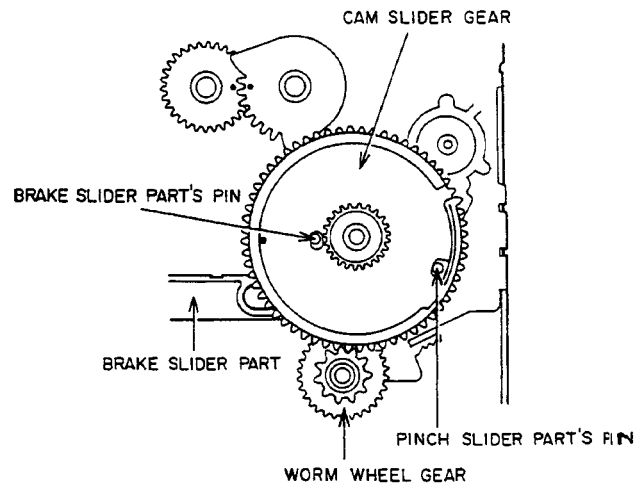


Fig. 3-9

2) Set the CAM SLIDER GEAR. At this time, adjust the position of the BRAKE SLIDER PART and PINCH SLIDER PART so that both pins appear through the holes on the CAM SLIDER GEAR as shown in Fig.3-9.

3) Attach the FRONT LOADING GEAR as shown in Fig. 3-10. At this time, align the Ⓑ mark on the FRONT LOADING GEAR with the Ⓑ hole of the FRONT LOADING SLIDER as shown in Fig. 3-11.

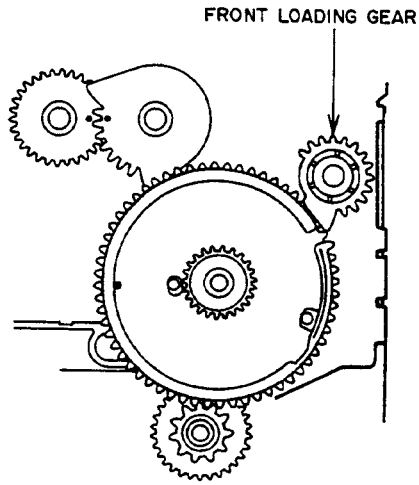


Fig. 3-10

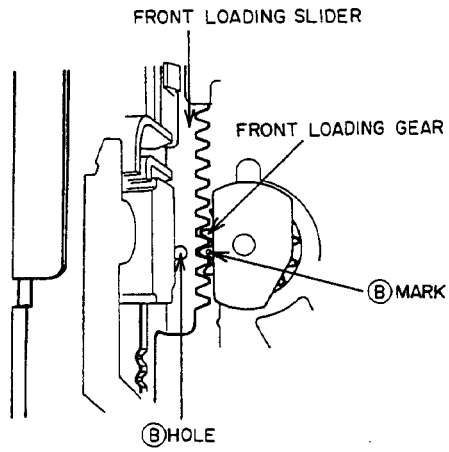


Fig. 3-11

3-4-3. Confirmation of the position of the EJECT GEAR

1) Confirm that the EJECT GEAR is in the correct position as shown in Fig. 3-12.

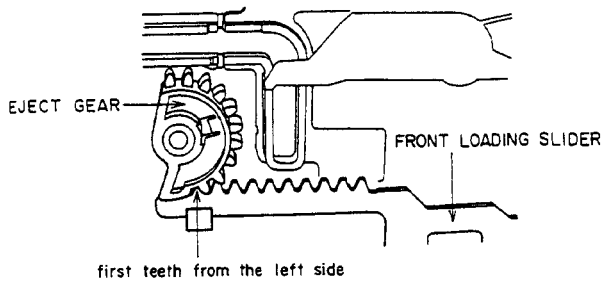


Fig. 3-12

2) Install the LOADING DRIVE BLK as shown in Fig. 3-13.

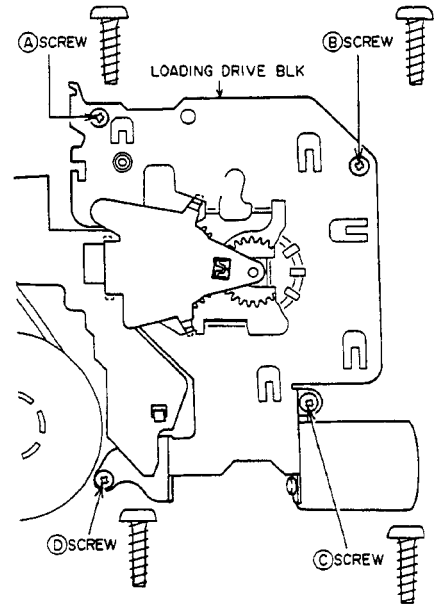


Fig. 3-13

3-4-4. Installation of the MODE SELECT SWITCH

1) Set the MODE SELECT SWITCH's gear so that the © mark is in the center of the © hole as shown in Fig. 3-14.

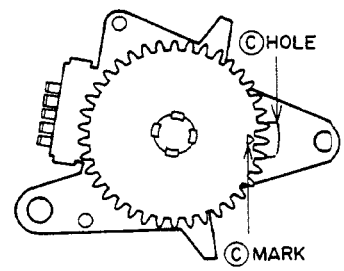


Fig. 3-14

2) Attach the MODE SELECT SWITCH to the LOADING DRIVE BLK. At this time, align the hollow of the gear's tooth (reverse side of the © mark) with the © groove of the CAM SLIDER GEAR as shown in Fig. 3-15.

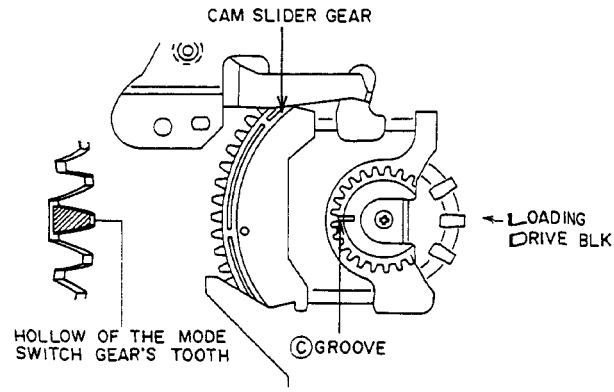


Fig. 3-15

3-4-5. Installation of the LOADING ARM BLK

1) While covering the SENSOR (S) with your fingers, connect the AC power plug to the AC socket. The FRONT LOADING SLIDER will reach the "EJECT" position. Then disconnect the AC power plug from the AC socket before you release your fingers from the SENSOR (S).
2) Install the LOADING ARM BLK in the reverse order of 3-1-2 (Removal of the LOADING ARM BLK). Set the position between both the EJECT GEAR and the JOINT GEAR as shown in Fig. 3-16.

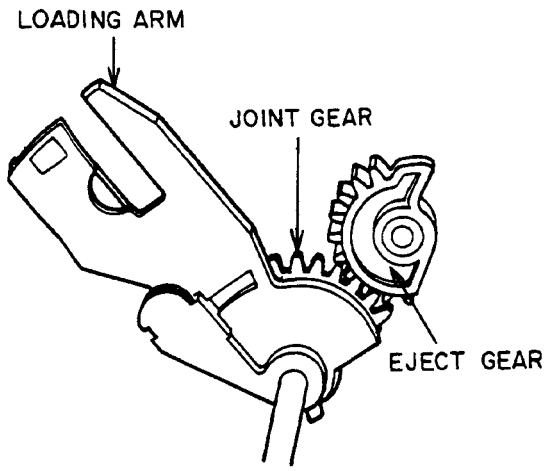


Fig. 3-16

3-4-6. Installation of the CASSETTE LOAD BLK, FRONT GUIDE and UPPER PLATE

1) Attach the CASSETTE LOAD BLK, FRONT GUIDE and UPPER PLATE in the reverse order of 3-1-1 (Removal of the CASSETTE LOAD BLK).
2) Insert a video cassette tape and confirm that the loading mechanism will operate properly.

3-5.REPLACEMENT OF THE PINCH HOLDER PART

1) Remove the grip ring and release the stopper of the PINCH ARM and remove the PINCH ARM BLK as shown in Fig 3-17.

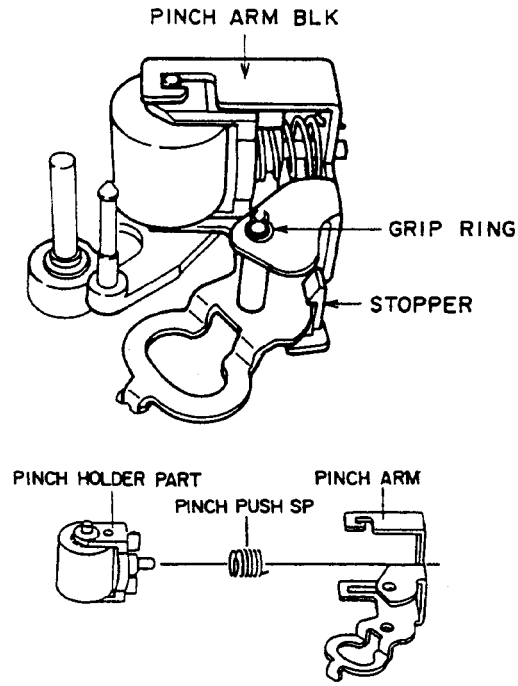


Fig. 3-17

2) Turn the PINCH HOLDER PART 30 degrees clockwise while pushing it backward and remove the PINCH HOLDER PART from the PINCH ARM.
3) Reassemble the PINCH ROLLER ARM BLK in the reverse order of 1) to 2).

3-6. REPLACEMENT OF THE IDLER PART AND REVIEW BRAKE PART

1) Remove the REWIND BRAKE PART, CASSETTE LOAD BLK & ARM LOADING BLK. (Refer to 3-1, REMOVAL OF THE EJECTOR BLK.)
2) Release the stopper of the IDLER PART as shown in Fig. 3-18, then remove it.

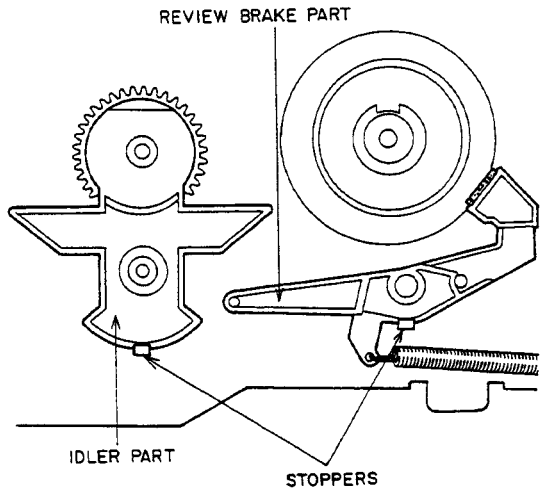


Fig. 3-18

3) Take off the review brake part spring, then release the stopper of the REVIEW BRAKE PART and remove it.
4) Reassemble these parts in the reverse order of 1) to 3).

3-7. REPLACEMENT OF THE UPPER DRUM

3-7-1. Removal of the UPPER DRUM

1) Unsolder the four relay leads and remove the two upper drum fixing screws as shown in Fig. 3-19.
2) Gently lift and remove the UPPER DRUM.

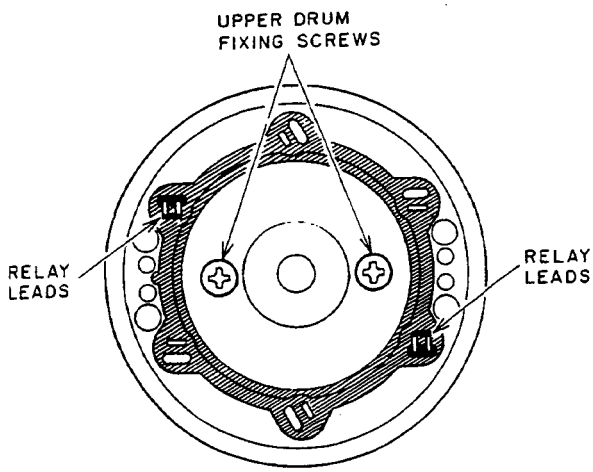


Fig. 3-19

3-7-2. Installation of the UPPER DRUM

1) Attach the UPPER DRUM to the LOWER DRUM ROTOR so that the upper drum convex Ⓐ and lower drum rotor's white mark are in the same direction as shown in Fig. 3-20.

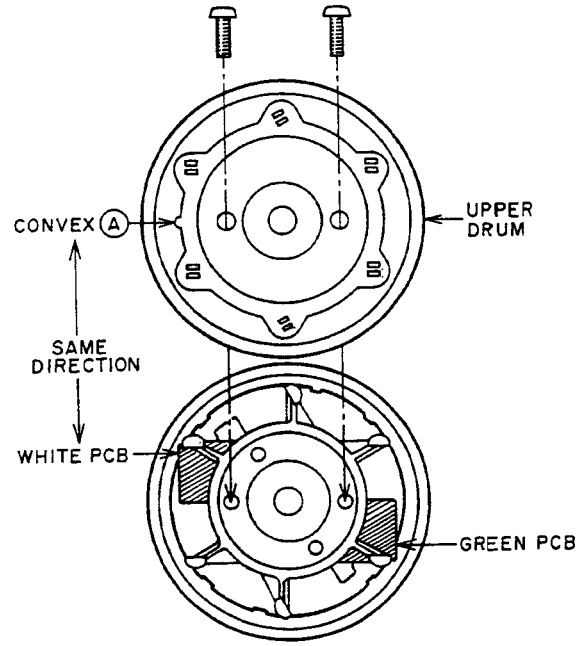


Fig. 3-20

NOTE: Because height precision is required for proper performance, and because head tips are fragile, the following points should be noted when replacing the UPPER DRUM BLOCK.

a) Do not loosen the set screw on the collar preload.
b) Before fixing, use alcohol to clean both surfaces where the upper drum and the rotary transformer meet.
c) If the UPPER DRUM can not be inserted on to the shaft easily during installation, clean the hole in the UPPER DRUM with alcohol and put a little oil on the shaft.
d) Make sure that the upper drum fixing screw holes on the rotary transformer part and the upper drum fixing screw penetration holes match exactly before inserting the fixing screws.
e) Tighten the two upper drum fixing screws alternately and gradually.

3-7-3. After replacement

After replacement, the following adjustments are necessary for the proper performance.

1) Control head Phase adjustment. (4. MECHANISM ADJUSTMENT 4-3-3.)
2) PB switching point adjustment. (ELECTRICAL ADJUSTMENT Step 8)
3) Video head REC current adjustment. (ELECTRICAL ADJUSTMENT Step 5)

3-8. DRUM MOTOR PC BOARD REPLACEMENT

1) Remove the two Ⓐ screws on the ROTARY PLATE and remove the ROTARY PLATE.
Then disconnect the connector on the DRUM MOTOR PCB as shown.

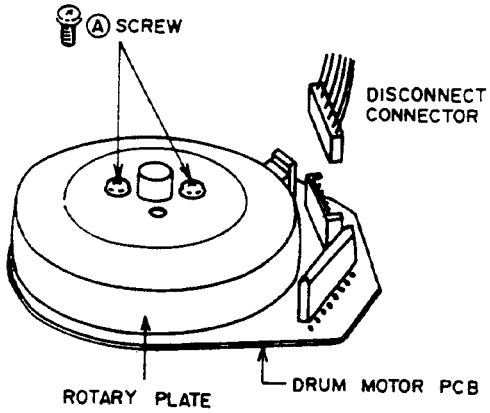


Fig. 3-21

2) Remove the three Ⓑ screws which retain the DRUM MOTOR PCB and replace the DRUM MOTOR PCB.

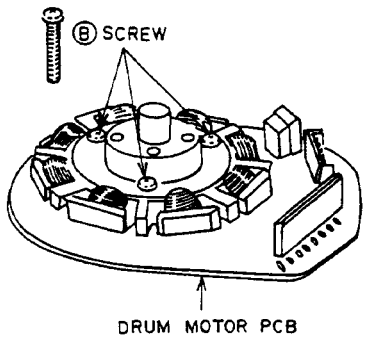


Fig. 3-22

3) Attach the ROTARY PLATE to the collar preload so that the rotary plate Ⓒ hole and collar preload Ⓓ hole are in the same direction.

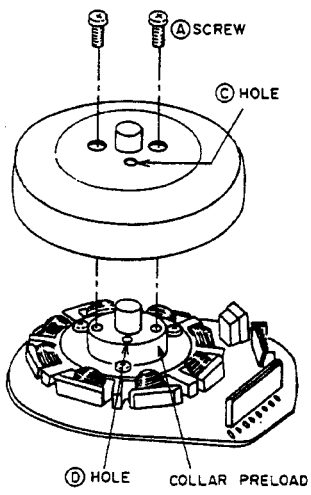


Fig. 3-23

3-9. REMOVAL OF THE MECHANISM BLOCK

3-9-1. Removal of the PRE AMP PC Board

1) Remove the VIDEO PCB.
2) Remove the two Ⓐ screws then pull up the PRE AMP PCB as shown in Fig. 3-24.

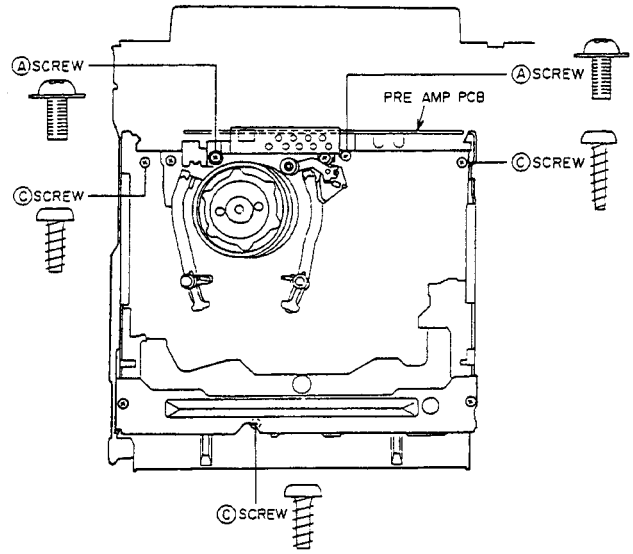


Fig. 3-24

3-9-2. Removal of the MECHANISM BLK (MECHA. FRAME)

1) Disconnect the connectors P402, P404, on the CONTROL/AUDIO PCB and P1 on the A/C HEAD PCB.
2) Remove the three Ⓒ screws from the MECHA. FRAME as shown in Fig. 3-24.
3) Hold the rear side of the MECHA. FRAME then remove by pulling up backward.
4) Reassemble in the reverse order for installation.

3-10. REMOVAL OF THE HEAD CLEANER BLOCK

1) Remove the Ⓐ screw on the HEAD CLEANER BLOCK.

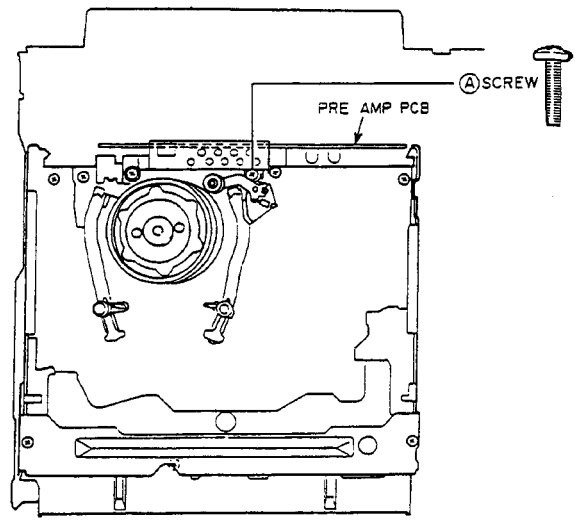


Fig.3-25

4. MECHANISM ADJUSTMENT

4-1.BACK TENSION ADJUSTMENT

1) Play back a recorded tape which is no longer needed.
2) Confirm that the Ⓐ groove on the TENSION ARM aligns with right end of the Ⓐ mark on the MECHA. CHASSIS as shown in Fig.4-1.
3) If the result is not satisfactory, eject the tape and adjust the TENSION ADJUST repeatedly until the result is satisfactory.

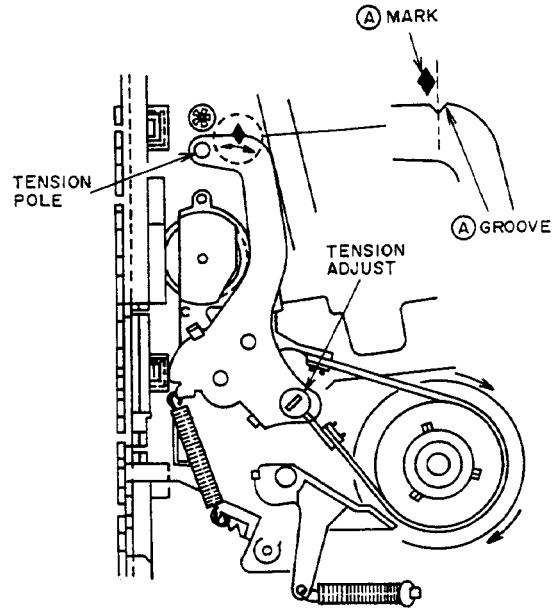


Fig. 4-1

4-2.TAPE TRANSPORT ADJUSTMENTS

NOTE: The following adjustments are required only when an irregularity is found since these adjustment are performed precisely at the factory.

4-2-1. Tape curl adjustment at the TAKE-UP TAPE GUIDE

1) Play back a recorded tape which is no longer needed.
2) Turn the Ⓐ screw on the A/C HEAD BLK until the edge of the tape barely touches the lower part of TAKE-UP TAPE GUIDE without any curl or wrinkle.
3) Once the Ⓐ screw is adjusted, A/C HEAD height and azimuth adjustment is required. (Refer to 4-3. A/C HEAD POSITION ADJUSTMENT.)

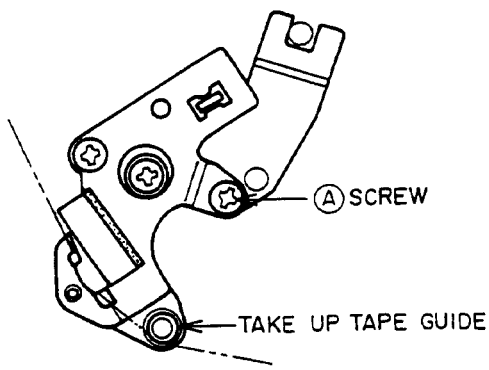


Fig. 4-2

(TAKE-UP TAPE GUIDE)

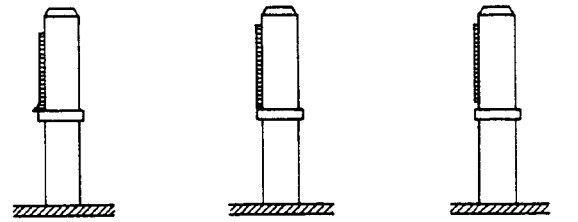


Fig. 4-3

4-2-2. Confirmation of tape curl at the SUPPLY TAPE GUIDE

Confirm that the edge of the tape barely touches the lower part of the SUPPLY TAPE GUIDE without any curl or wrinkle as shown in Fig.4-4.

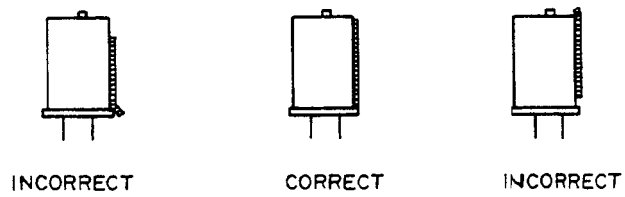


Fig. 4-4

4-2-3. REVIEW ARM height adjustment

1) Play back the beginning part of an E-240 (T-160) tape and set the unit in the REVIEW mode by pressing the REW button.
(Remove the tape protection cover to make the adjustment easy.)

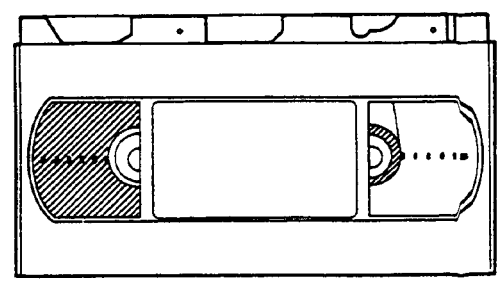


Fig. 4-5

2) Turn the REVIEW ARM height Ⓐ nut so that the edge of the tape barely touches the lower part of the TAKE-UP TAPE GUIDE without any curl or wrinkle between the TAKE-UP TAPE GUIDE and the CAPSTAN SHAFT as shown in Fig.4-6 to Fig.4-8.

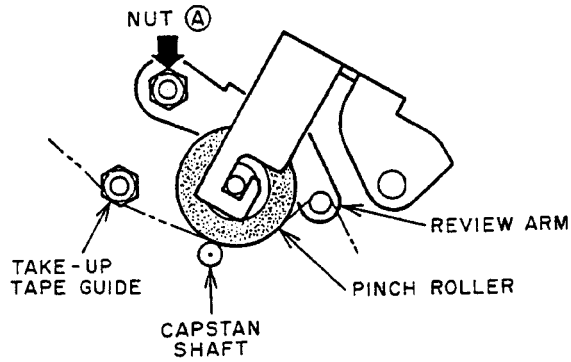


Fig. 4-6

(TAKE-UP TAPE GUIDE)

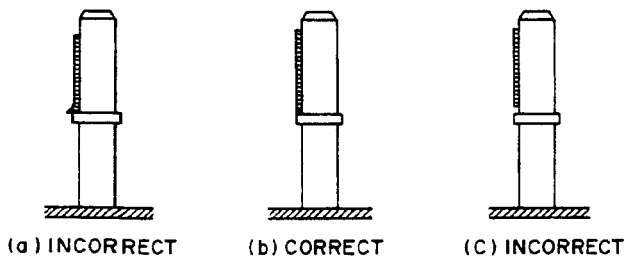


Fig. 4-7

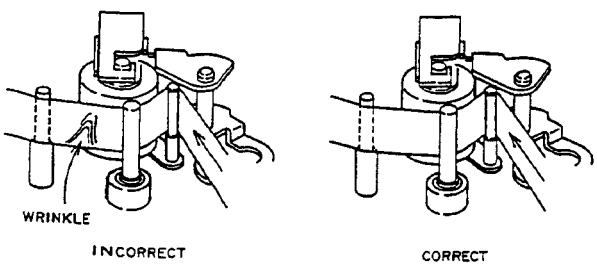


Fig. 4-8

3) Play back the beginning part of an E-240 (T-160) tape and this time set the unit in the QUE mode by pressing the F.FWD button.
4) Confirm there is no curl or wrinkle at REVIEW ARM's guide.
If curl or wrinkle of the tape has occurred, slightly turn the Ⓐ nut (Shown in Fig.4-6) until it disappears.

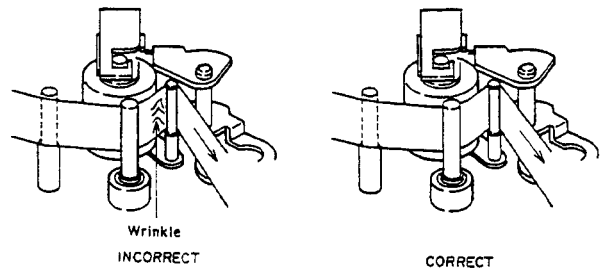


Fig. 4-9

5) Set the unit in REVIEW mode again. Then confirm that there is no curl or wrinkle at the TAKE-UP TAPE GUIDE.
(A small gap may appear after this adjustment, but this is allowable)

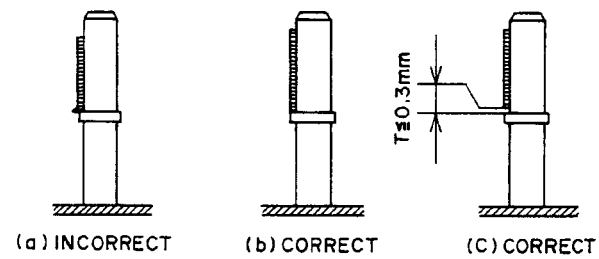


Fig. 4-10

NOTE:
1. If results are not satisfactory, repeat steps 2) to 5).
2. Always play an undamaged tape to obtain satisfactory adjustment.
3. Because an E-240 (T-160) tape can easily be damaged due of its thinness, a pre-adjustment with an E-180 (T-120) tape is recommended.

4-2-4. LOADING LEADER height adjustments

1) Slightly loosen the set screw at the lower part of the LOADING LEADERs (L), (R) so that the LOADING LEADER can be adjusted with reasonable tightness. (Refer Fig.4-11.)

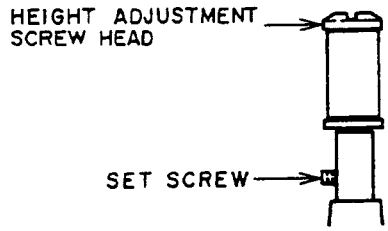


Fig. 4-11

2) Play back the alignment tape MH-2 (Stairsteps).
3) Connect an oscilloscope's CH-1 to the Q201 emitter (ENVE) on the VIDEO PCB and CH-2 to the IC1 ② pin (VSWP) on the PRE AMP PCB for triggering.
4) Turn the LOADING LEADER heads with a flat head (—) screwdriver to obtain flat RF envelope as ideal envelope as shown in Fig.4-12.
5) After adjustment is completed, tighten the loading leader set screws.

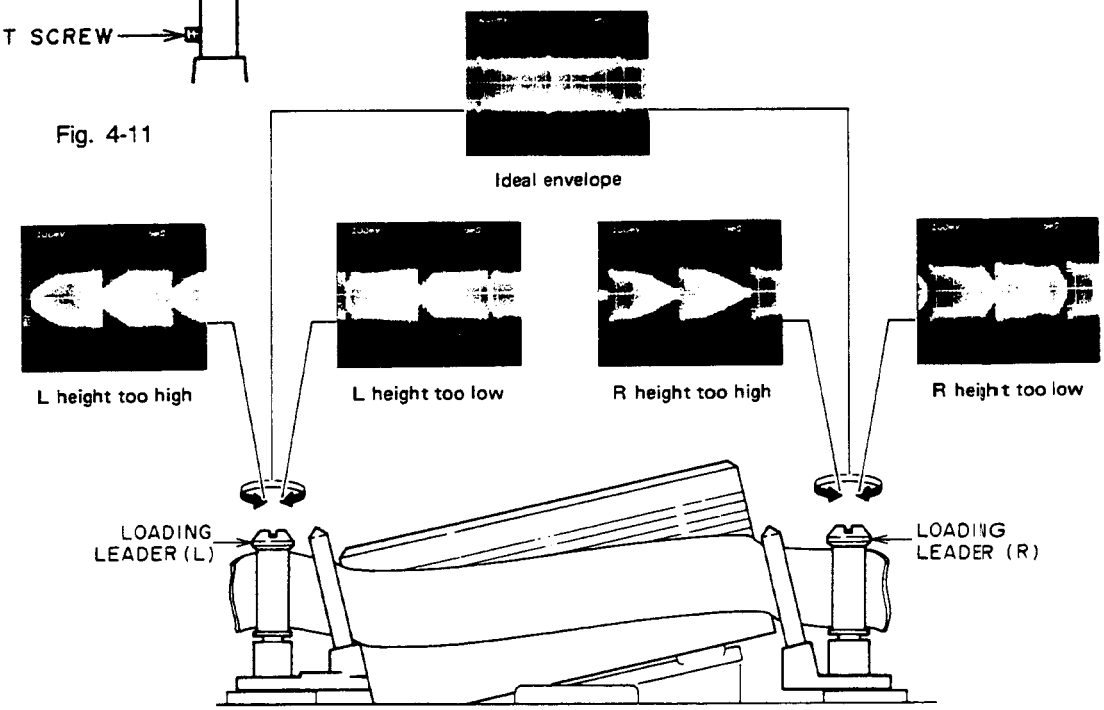


Fig. 4-12

4-3. A/C HEAD POSITION ADJUSTMENT

4-3-1. Azimuth adjustment

1) Connect an AC voltmeter or an oscilloscope to the AUDIO OUT terminal on the rear panel.
2) Play back the alignment tape MH-2 (6kHz).
3) Adjust the Ⓑ screw to obtain the maximum audio output.

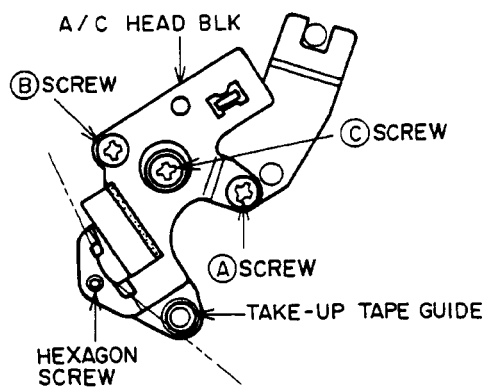


Fig.4-13

4-3-2. Height adjustment

1) Play back the alignment tape MH-2 (6kHz).
2) Connect an oscilloscope's CH-1 to the AUDIO OUT on the rear panel and CH-2 to the TP401 (CTL OUT) on the CONTROL/AUDIO PCB.
3) Observe the AUDIO OUT and CTL OUT levels.
4) Turn the hexagon screw, Ⓐ screw and Ⓑ screw in succession by small amounts at a time to obtain maximum audio output and control pulse levels. With reference to the hexagon screw, turn Ⓐ screw until the tape edge barely touches the lower part of the TAKE-UP TAPE GUIDE without any curl or wrinkles, and adjust azimuth with Ⓑ screw.

4-3-3. Phase adjustment

1) Connect an oscilloscope's CH-1 to the Q201 emitter (ENVE) on the VIDEO PCB and CH-2 to the IC1 ② pin (VSWP) on the PRE AMP PCB for triggering.
2) Play back the alignment tape MH-2 (Stairsteps).
3) Press the either > or < tracking buttons on the front panel so that tracking center indicator is lit.
4) Loosen the © screw slightly so that the A/C HEAD PLATE can be moved with reasonable tightness.
5) Insert a sharp flat head (—) screwdriver into the A/C HEAD BASE and Ⓐ hole as shown in Fig.4-15.
6) Move the A/C HEAD BASE by moving a screwdriver in the direction of the arrow as shown in Fig.4-15 to obtain the maximum RF output, then tighten the © screw.

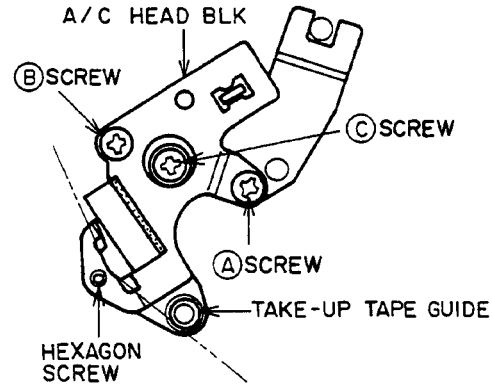


Fig. 4-14

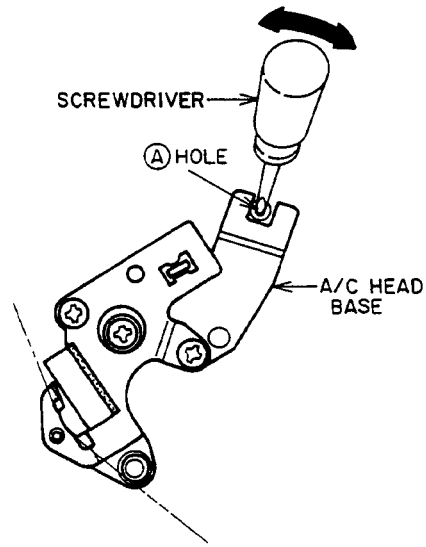


Fig. 4-15

SECTION 2
ELECTRICAL ADJUSTMENTS

Precautionary items prior to adjustments
1. The color bar generator output should be 1.0 Vp-p.
2. The video output terminal should be terminated with 75 ohms (connect dummy load or 75 ohms input TV.)

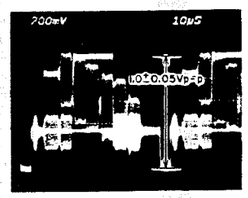
Required following alignment tapes.

Alignment tape	System
MH-1	NTSC
MH-2	PAL

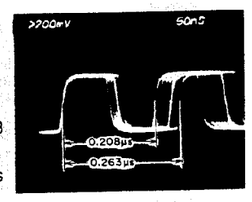
STEP	ADJUSTMENT ITEM
1.	MODE and INPUT SIGNAL/ALIGNMENT TAPE
2.	TEST POINT and ADJ part
3.	REMARKS (•) & RESULT (*)

Test point ADJ point

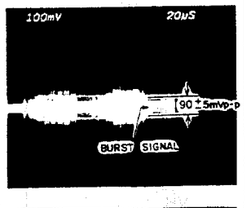
1 VIDEO PB LEVEL
1. "PB", alignment tape MH-2 (Color bars)
2. VIDEO OUT & VR101 (PB LEVEL)
3. • Connect an oscilloscope to VIDEO OUT
   * Adjust VR101 so that PB level becomes 1.0 Vp-p

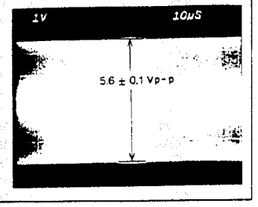


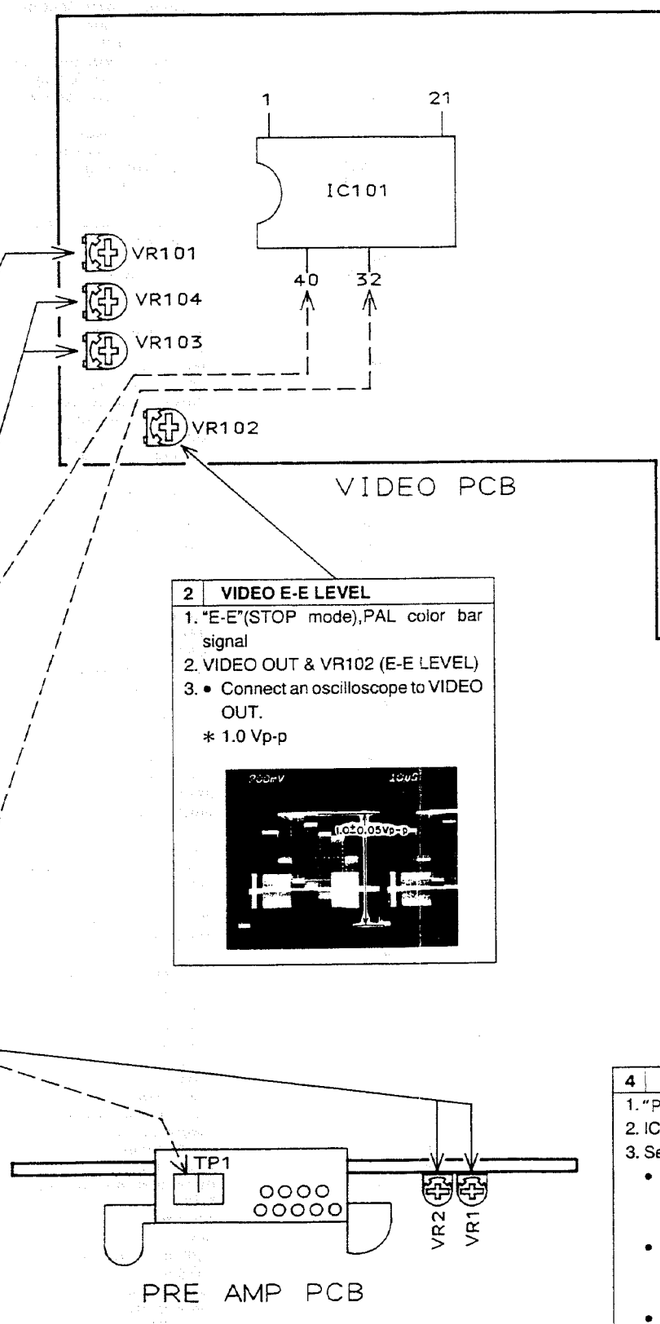
3 CARRIER SET & DEVIATION
1. "REC", PAL color bar signal
2. IC101 ㊵ pin (REC.Y) & VR103 (CARRIER), VR104 (DEVIATION)
3. • Connect an oscilloscope to IC101 ㊵ pin (REC.Y)
   * VR103 (CARRIER) : 0.263 μs (3.8 MHz)
   * VR104 (DEVIATION) : 0.208 μs (4.8 MHz)



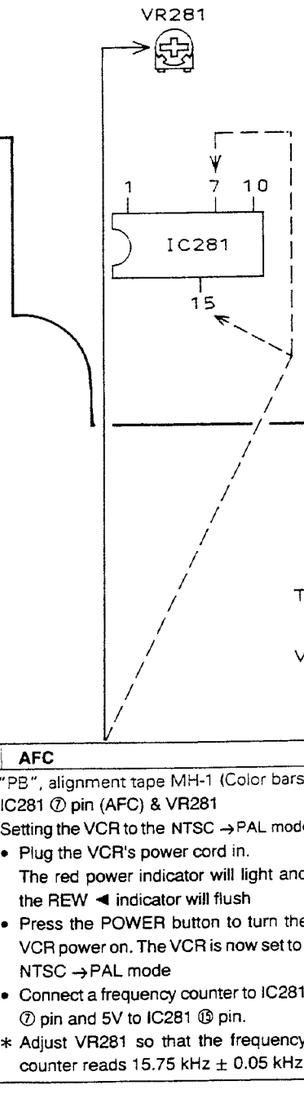
5 VIDEO REC CURRENT
1. "REC", PAL color bar signal
2. TP1 (REC.CURR), IC101 ㉜ pin (C.SYNC) & VR1 (REC-Y),VR2 (REC-CHROMA)
3. • Connect an oscilloscope's CH-1 to TP1 (REC.CURR), CH-2 to IC101 ㉜ pin (C.SYNC) for triggering and ground to PRE AMP PCB.
   • Turn the VR1 (REC-Y) fully counterclockwise.
   * Adjust VR2 (REC-CHROMA) so that the chroma REC current becomes 90 mVp-p at the burst signal area.
   * Disconnect the input signal, then adjust VR1 (REC-Y) so that Y REC current becomes 5.6 Vp-p.







2 VIDEO E-E LEVEL
1. "E-E"(STOP mode),PAL color bar signal
2. VIDEO OUT & VR102 (E-E LEVEL)
3. • Connect an oscilloscope to VIDEO OUT.
   * 1.0 Vp-p

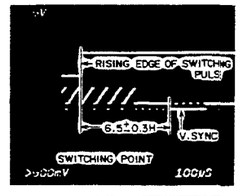


4 AFC
1. "PB", alignment tape MH-1 (Color bars)
2. IC281 ⑦ pin (AFC) & VR281
3. Setting the VCR to the NTSC →PAL mode
   • Plug the VCR's power cord in. The red power indicator will light and the REW ◄ indicator will flush
   • Press the POWER button to turn the VCR power on. The VCR is now set to NTSC →PAL mode
   • Connect a frequency counter to IC281 ⑦ pin and 5V to IC281 ⑮ pin.
   * Adjust VR281 so that the frequency counter reads 15.75 kHz ± 0.05 kHz

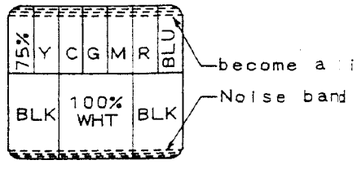
6 AUDIO PB LEVEL
1. "PB", alignment tape MH-2 (1kHz, 0 dB)
2. AUDIO OUT & VR301
3. • Connect an AC voltmeter to AUDIO OUT
   * -5 dBs

7 AUDIO REC BIAS
1. "REC", No signal input
2. P303 pin & VR302
3. • Connect an AC voltmeter to P303 ① pin (GND side) and ② pin. (Do not connect the AC voltmeter's ground to the VCR's ground.)
   * Adjust VR302 so that the reading on the AC voltmeter becomes 2.5 mV

8 PB SWITCHING POINT
1. "PB", alignment tape MH-2 (Stairsteps)
2. TP401 (SWP), VIDEO OUT &VR402 (SW.POINT)
3. • Connect an oscilloscope's CH 1 to TP 401 (SWP) for triggering and CH-2 to VIDEO OUT
   * Adjust VR402 so that the switching point is positioned 6.5H from the V-SYNC left edge as shown.



9 VERTICAL STABILITY
1. "PB/STILL", alignment tape MH-2 (Color bars)
2. TV monitor screen
3. On the PB mode, keep pressing the "STILL" button until still picture becomes noiseless and adjust VR401 so that still picture vibration becomes minimum.



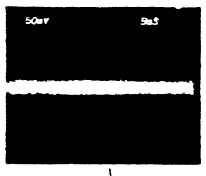
SECTION 3
CHARTS AND DIAGRAMS

ABBREVIATIONS (VIDEO)

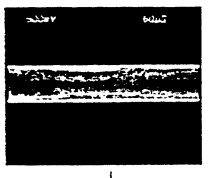
ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
A	Audio or Analogue	MOD	MODulator
AC	Alternating Current	MRS	Motor ReverSe
ACC	Automatic Color Control	NG	Noise Gate
A/C	Audio and Control	NICAM	Near Instanteneous Compand Audio Multiplex
ADJ	ADJust (ment)		
AFC	Automatic Frequency Control	NON-LIN	NON-LINear
AFT	Automatic Fine Tuning	N.T.S.C.	National Television System Committee
AGC	Automatic Gain Control	OSC	OSCillator
AH	Audio Head	PAL	Phase Alternation by Line
AL	ALways (voltage)	PB	Play Back
ALC	Automatic Level Control	PCB (P.C.B)	Printed Circuit Board
A-SW.P	Audio SWitching Pulse	P-COM	Phase-COMparator
A-MUTE	Audio MUTE	P DOWN	Power DOWN
ANT	ANTenna	PG	Pulse Generator
APC	Automatic Phase Control	P.I.P	Picture In Picture
ASSY	ASSemblY	PL, PLG	PLunger (PLunGer)
BAL	BALance	PRG (PGM)	PRoGram (ProGraM)
B DOWN	Break DOWN	PU	Pick UP (head, pulse)
BGP	Burst Gate Pulse	PWR	PoWeR
BLK	BLocK or BLacK	Q	Quality factor
BPF	Band Pass Filter	R	Right
BU	Back Up (voltage)	RAM	Random Access Memory
B/W	Black and White	REC	RECord
C	Chroma or Color	REF	REFerence
CCD	Charge Coupled Device	REF-V	REFerence Vertical signal
CCIR	Comité Consultatif International des Radio communications	REG	REGulator
		REV (REVW)	REView (REVieW)
CH (ch)	CHannel (channel)	REW	REWind
CLK	CLocK	RF	Radio Frequency
CM	Capstan Motor	ROM	Read Only Memory
CN	CoNnector	R.S SW	Record-Safety SWitch
COMP	COMParator	RST (RES)	ReSet (RESet)
CSW	Cassette SWitch	RVS	ReVerSe
CSYNC	Composite SYNC	S	Sensor, Shield
CTL	ConTrol	SAW	Surface Acoustic Wave
CUE	CUE	SC	SimulCast
DAC	Digital to Analog Converter	S CLK	Serial CLocK
DC	Direct Current	SECAM	SÉquentiel Couleur À Mémoire
DEMOD	DEMODulator	S & H	Sample and Hold
DET	DETetct (DETector)	SLP	Super Long Play
DL	Delay Line	SP	Standard Play
DM	Drum Motor	SPD	SPeeD
DOC	Drop Out Compensator	SRP	Supply Reel Pulse
D.P.E	Drum Phase Error	SRV	SeRVo
D.PG	Drum Pulse Generator	SOW	Sync On Word
EE	Electronic to Electronic	STBY	STandBY
EF	Emitter Follower	S.VHS	Super VHS
EMPHA	EMPHAsis	SW	SWitch
ENV	ENVelope	SW'NG	SWitchiNG
EP	Extended Play	SWP	SWitching Pulse
EP ROM	Erasable Programmable ROM	SYNC	SYNChronize
EQ	EQualizer	T-AUDIO	Tuner AUDIO
FE	Full track Erase	TPZ (TRAPE)	TraPeZoid (TRAPEzoid)
FF	Flip-Flop or Fast Foward	TRK	TRacKing
FG	Frequency Generator	TRP	Take up Reel Pulse
Fig	Figure	T/U	Take Up
FLD	FLuorescent Display	TV	TeleVision
FM	Frequency Modulation	UHF	Ultra High Frequency
Fo	resonance Frequency	UNR	UNRegulated (voltage)
FREQ	FREQuency	V	Vertical or Video
GND	GrouND	VASS	Video Address Search System
H	Horizontal	VCO	Voltage Controlled Oscillator
HP	Horizontal (sync) pulse	VH	Video Head
HPF	High Pass Filter	VHF	Very High Frequency
HQ	High Quality System	VHS	Video Home System
IC	Integrated Circuit	VIF	Video Intermediate Frequency
ID	IDentification	VISS	Video Index Search System
IDL	IDLe (Voltage)	VJ	Video Judge
IMS	Interactive Monitor System	VM	Voltage for Memory
INS	INSert	VOB	Video On Blank
INV	INVerter	VOW	Video On Word
L	Left	VP	Vertical (sync) Pulse
LED	Light Emitting Diode	VPS	Video Program System
LIM	LIMitter	VPT	Video Programming by video Text
LM	Loading Motor	VT	Voltage for Tuning
LM STP	Loading Motor STop	WHT	WHiTe
LP	Long Play	Y	Luminance
LPF	Low Pass Filter	2H	2 Hour (SP)
ME-SECAM	Middle East SECAM	4H	4 Hour (LP)
MI-COM	MIcro COMputer	6H	6 Hour (SLP/EP)
MM	Mono-stayble Multi		

1. VIDEO & AUDIO BLOCK DIAGRAM

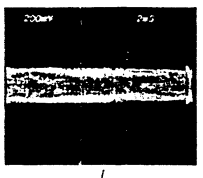
REC Y IN



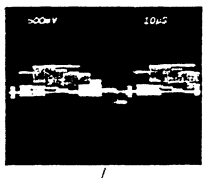
REC Y OUT



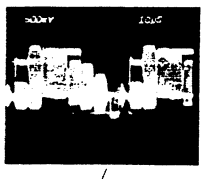
PB FM IN



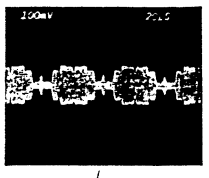
REC VIDEO IN



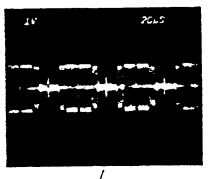
PB VIDEO OUT



PB 4.43MHz IN

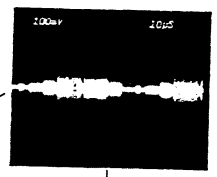


PB 4.43MHz OUT

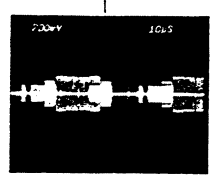


VIDEO OUT
AUDIO IN
VIDEO IN
RF OUT
ANT. IN
RF CONVERTOR
A. IN
V. IN
Q112
Q111
MESECAM ↔ PAL
SW101
IDL 5V
MESECAM
Q220
Q215
Q214
NTSC FROM CONTROL PCB
Q409 COLLECTOR
NTSC ON
(NTSC 4.43 → L)
NP
IC281 MS20635P
(NTSC→PAL PHASE CORRECTOR)
GCR
6dB AMP
SW CONT
HD MMV
FH VCO
P.D
BGP MMV
VR281 AFC
Q110
PAL/SECAM CONT
Q201
DL202
NTSC COMB FILTER 1H DELAY
Q213
NTSC ON
NTSC OFF
PAL COMB FILTER 1H DELAY
Q212
DL201
C SYNC
4.2V
VR102
C-E LEVEL
VR103
MMV FREQ
5V
IDL5V
Q211
MOD IN
SP/LP
1/2FH CARSH
FM MOD
VIDEO
VCC1
VCC2
VIDEO AMP
GV/GHINS CHAR INS W/D CLIP
FBC
4.2V REG
AMP
P/S DET
COMB
KIL
321FH VCO
SLD
AGC DET
VIDEO AGC
PB AMP B.DEEM KILLER
KIL
BGP1
MES
KIL-DET
ID-DET
BGP2
1/8
DOUBLE LIMIT
DOC DET
CLAMP
Y/C MIX
LPF
6dB
CLAMP
SYNC SEP
FM DBMOD
DELAY
SUB LPF
PICTURE CONTROL
COMB DRIVER AMP
PAL 11dB NT 5dB
90° P.S
PB APC DET
REC AFC DET
HALF H. KILLER
BGP GEN
1/2
DOCO
NL DE EMPH
WIP NOICAN
DOC
CORR
LIM
K
B.G.
SPD
ACC DET
375NS
4.43M BPF
PAL
4PHASE SHIFTER
RF SW
CLAMP
3.5MHZ LPF
IC101 LA7391A (Y/C SIGNAL PROCESSOR)
VR104 DEV.
ACC. D AMP
BURST EMPH
MAIN CONV
5.06M BPF
SUB CONV
BALANCER
3RDLOCK PROTECT
MAIN DE EMPH
W/D CLIP
MAIN EMPH
NL EMPH
DETAIL EN-1
VCA
ATT
1MHZ LPF
REC APC DET
VXO
X2
XD IN
XD OUT
N.C CONT
X201
PB LEVEL
VR101
Q102
Q103
CHROMA TRAP
Q203
Q202
Q201
Q205
IC102 LC8992
Q105
Q106
LPF
CCD 1H DELAY LINE
CLK
Q207
Q206
Q107
IDL5V
PICTURE (FROM CONTROL IC401 ③ PIN)
Q209
TRICK (FROM CONTROL IC401 ⑭ PIN)
TRICK:ON
Q208

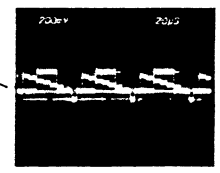
PB CHROMA IN



REC CHROMA OUT



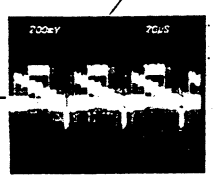
CCD IN (PB)



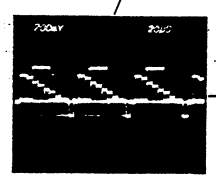
VIDEO PCB

OUT

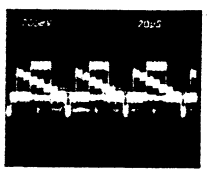
MAIN DE EMPHA OUT (PB)



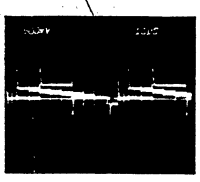
REC CLAMP IN



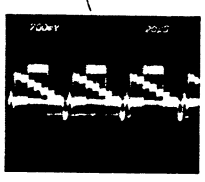
PB CLAMP IN



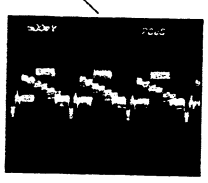
MAIN EMPHA OUT (REC)



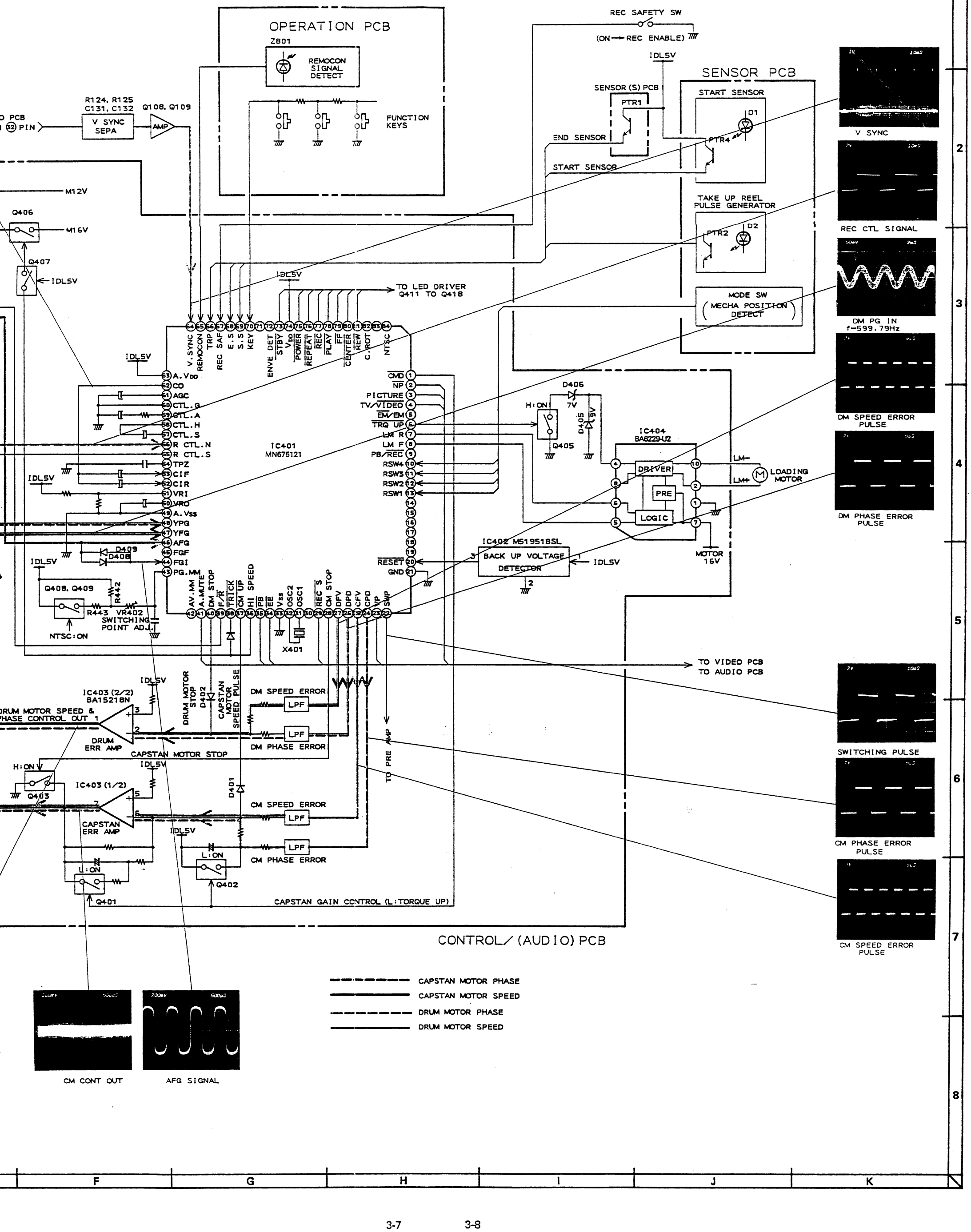
CCD FILTER OUT (PB)



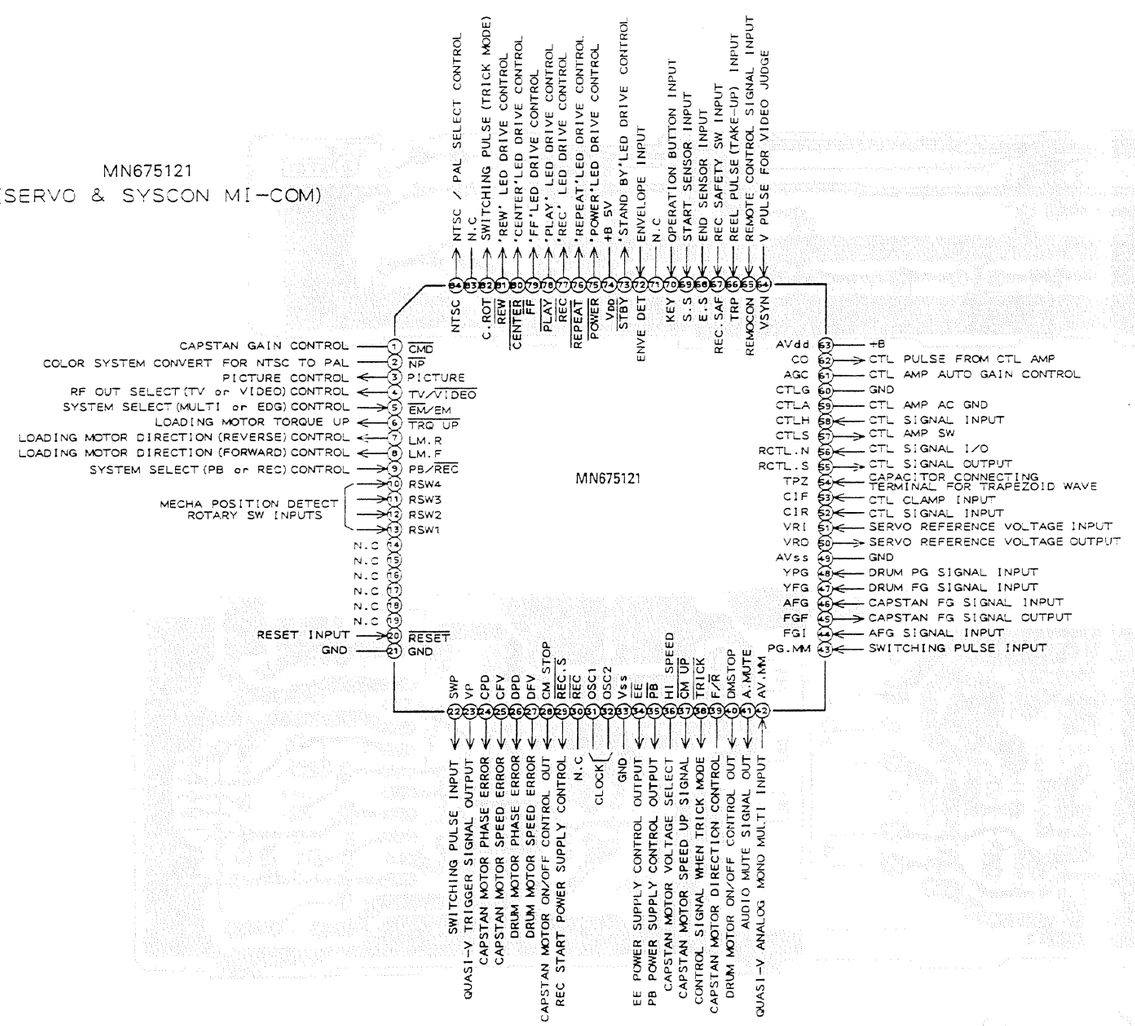
CCD OUT (PB)

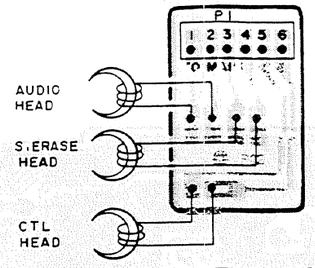


2. CONTROL & OPERATION BLOCK DIAGRAM

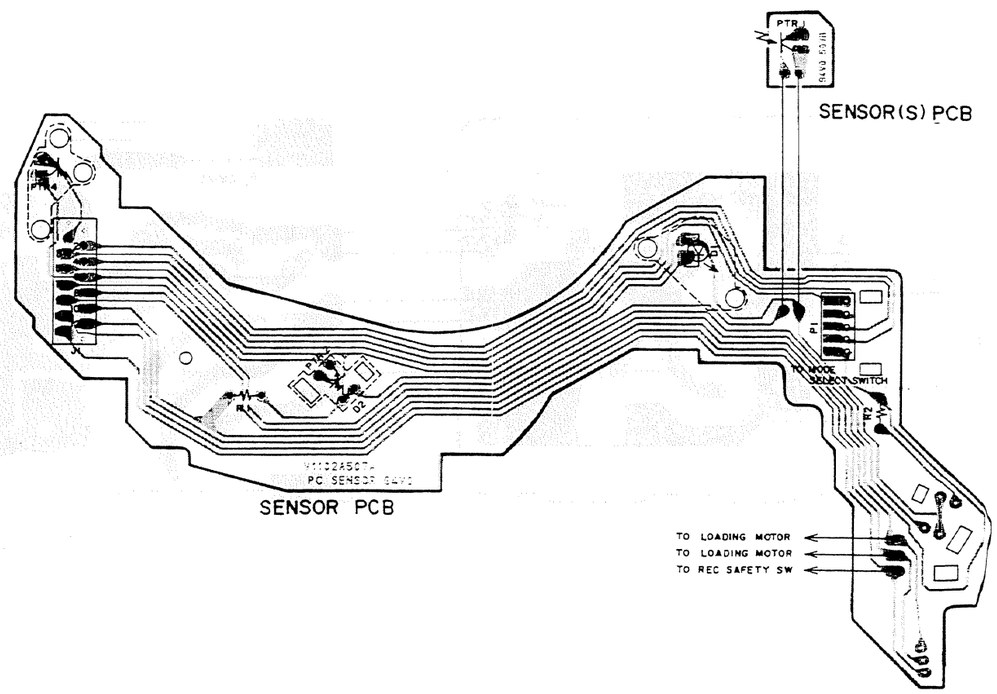

OPERATION PCB
Z801
REMOCON SIGNAL DETECT
FUNCTION KEYS
REC SAFETY SW
(ON→REC ENABLE)
IDL5V
SENSOR PCB
SENSOR (S) PCB
PTR1
START SENSOR
D1
PTR4
END SENSOR
START SENSOR
TAKE UP REEL PULSE GENERATOR
PTR2
D2
MODE SW (MECHA POSITION DETECT)
R124, R125
C131, C132
Q108, Q109
V SYNC SEPA
AMP
M12V
M16V
Q406
Q407
IDL5V
TO LED DRIVER Q411 TO Q418
V.SYNC
REMOCON
TRP
REC SAF
E.S
S.S
KEY
ENVE DET
STBY
POWER
REPEAT
REC
PLAY
FF
CENTER
REW
C.ROT
NTSC
IC401 MN675121
A.VDD
CO
AGC
CTL.G
CTL.A
CTL.H
CTL.S
R CTL.N
R CTL.S
TPZ
CIF
CIR
VRI
VRO
A.VSS
YPG
YFG
AFG
FGF
FGI
PG.MM
CMD
NP
PICTURE
TV/VIDEO
EM/EM
TRQ UP
LM R
LM F
PB/REC
RSW4
RSW3
RSW2
RSW1
RESET
GND
D406
7V
H:ON
Q405
D405
9V
IC404 BA6229-U2
DRIVER
PRE
LOGIC
LM−
LM+
LOADING MOTOR
MOTOR 16V
IC402 M51951BSL
BACK UP VOLTAGE DETECTOR
D409
D408
Q408, Q409
R442
R443
VR402
SWITCHING POINT ADJ.
NTSC:ON
AV.MM
A.MUTE
DM STOP
F/R
TRICK
CM UP
HI SPEED
PB
EE
VSS
OSC2
OSC1
REC S
CM STOP
DFV
DPD
CFV
CPD
VP
SWP
X401
TO VIDEO PCB
TO AUDIO PCB
IC403 (2/2) BA15218N
DRUM MOTOR SPEED & PHASE CONTROL OUT 1
DRUM ERR AMP
DRUM MOTOR STOP
D402
CAPSTAN MOTOR SPEED PULSE
DM SPEED ERROR
LPF
DM PHASE ERROR
CAPSTAN MOTOR STOP
PRE AMP
H:ON
Q403
IC403 (1/2)
D401
CM SPEED ERROR
CAPSTAN ERR AMP
L:ON
CM PHASE ERROR
Q402
Q401
CAPSTAN GAIN CONTROL (L:TORQUE UP)
CONTROL/ (AUDIO) PCB
V SYNC
REC CTL SIGNAL
DM PG IN f=599.79Hz
DM SPEED ERROR PULSE
DM PHASE ERROR PULSE
SWITCHING PULSE
CM PHASE ERROR PULSE
CM SPEED ERROR PULSE
CM CONT OUT
AFG SIGNAL
CAPSTAN MOTOR PHASE
CAPSTAN MOTOR SPEED
DRUM MOTOR PHASE
DRUM MOTOR SPEED

3. A/C HEAD & SENSOR CIRCUIT BOARDS



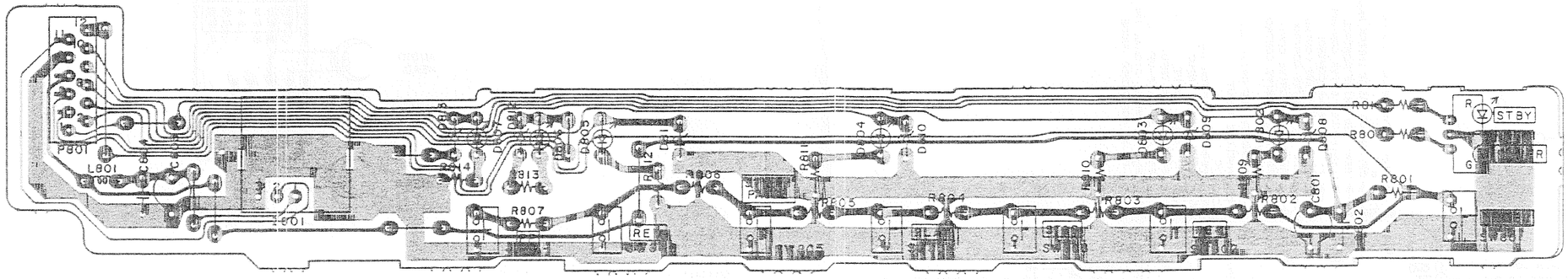


A/C HEAD PCB

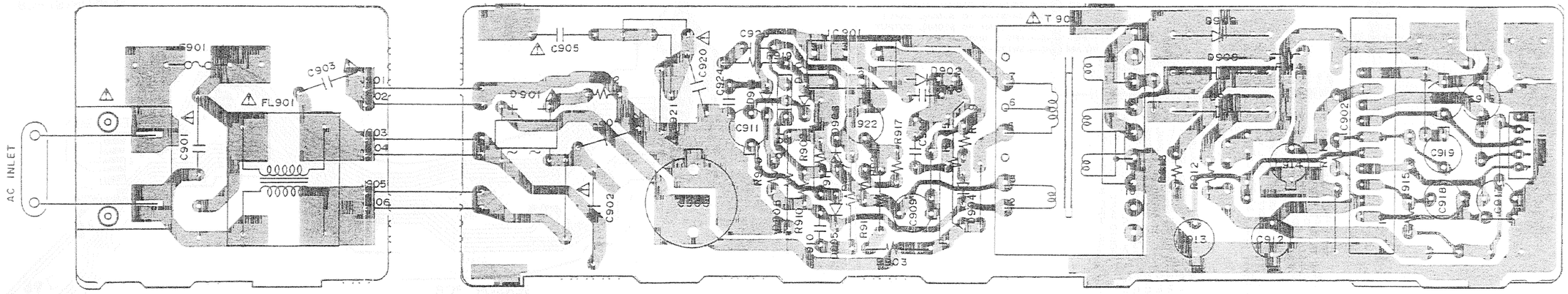


SENSOR PCB

4. OPERATION & POWER SUPPLY CIRCUIT BOARDS



OPERATION PCB

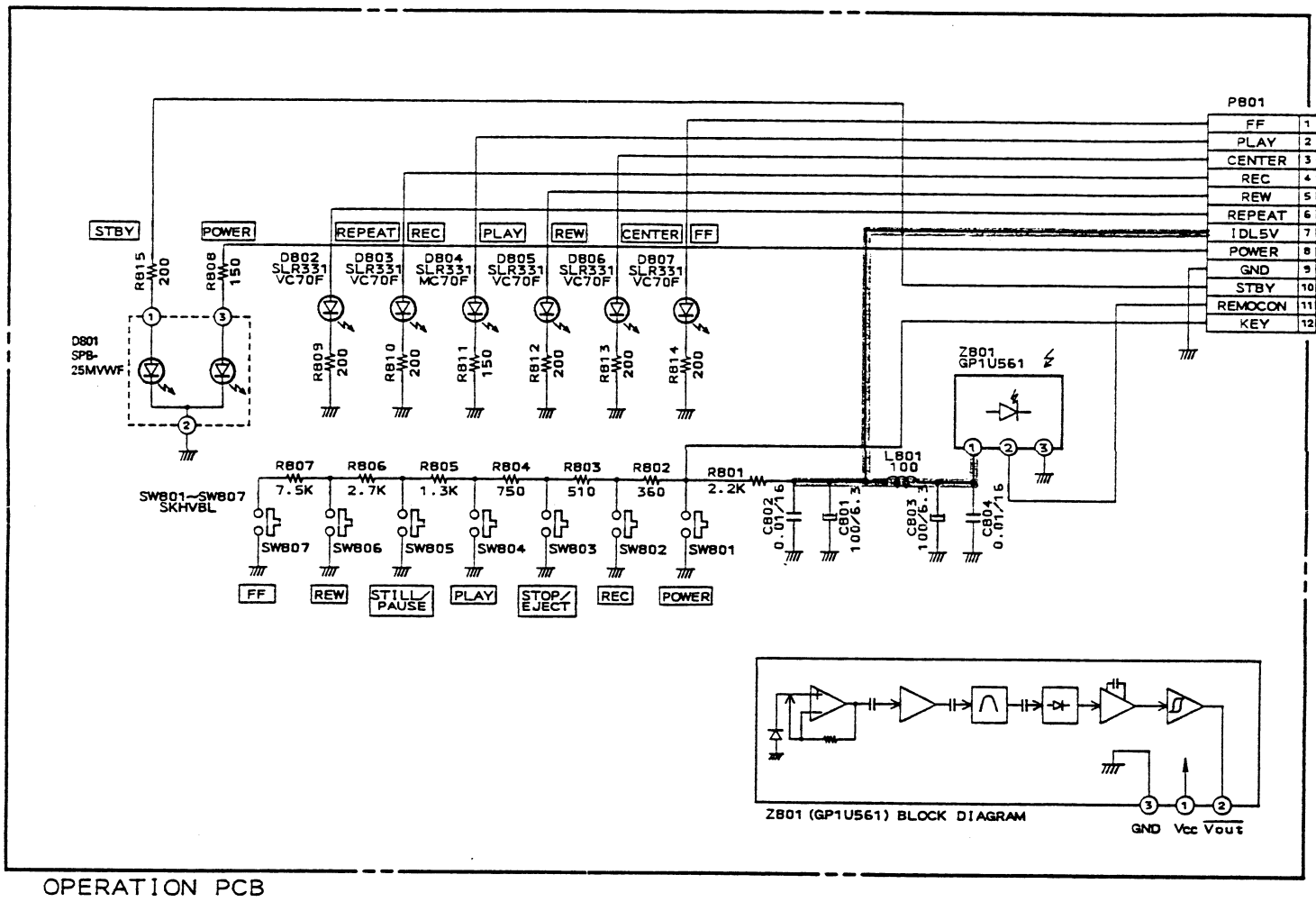


POWER SUPPLY PCB

WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS.

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

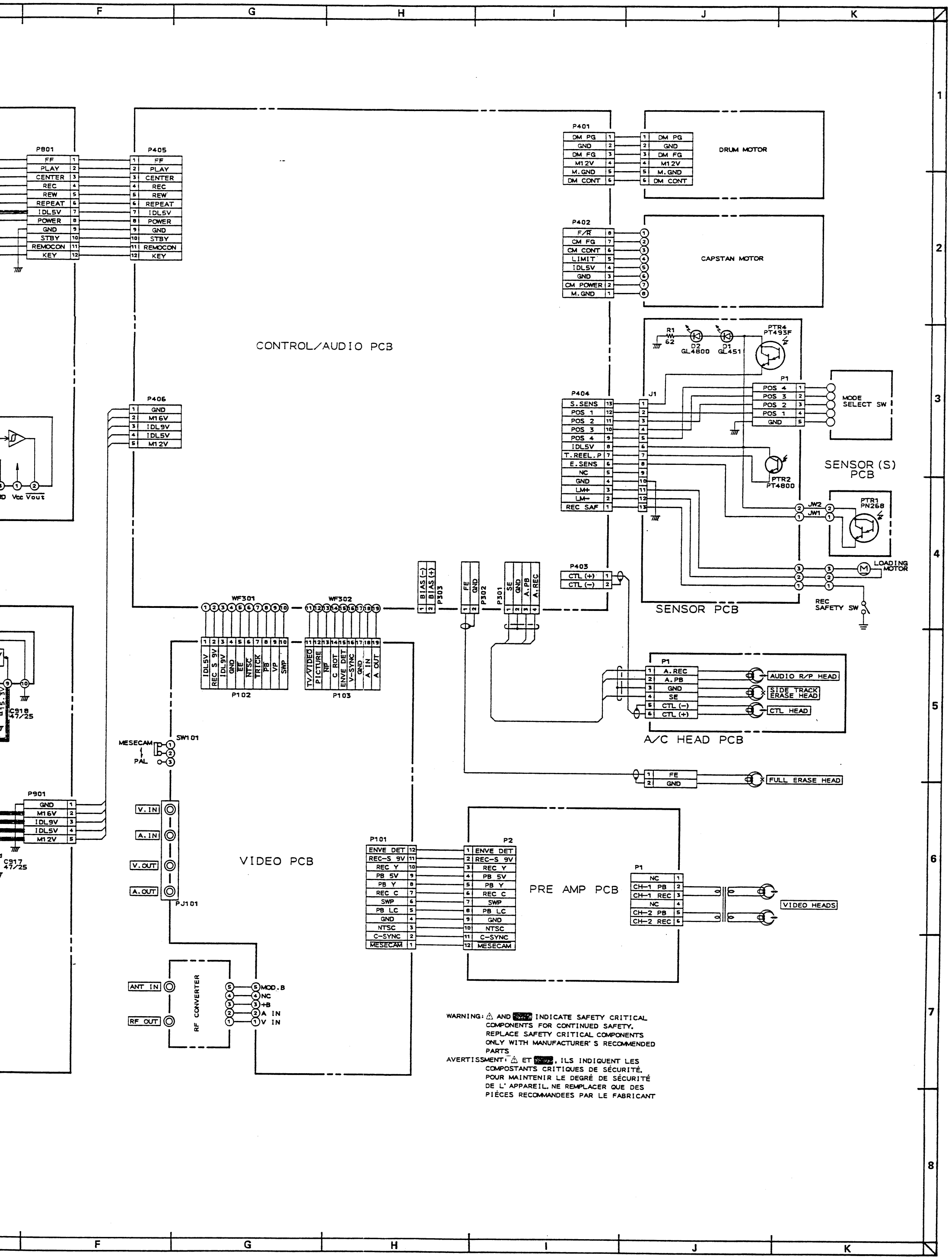
5. CONNECTION DIAGRAM (Power supply and Operation schematic diagrams)



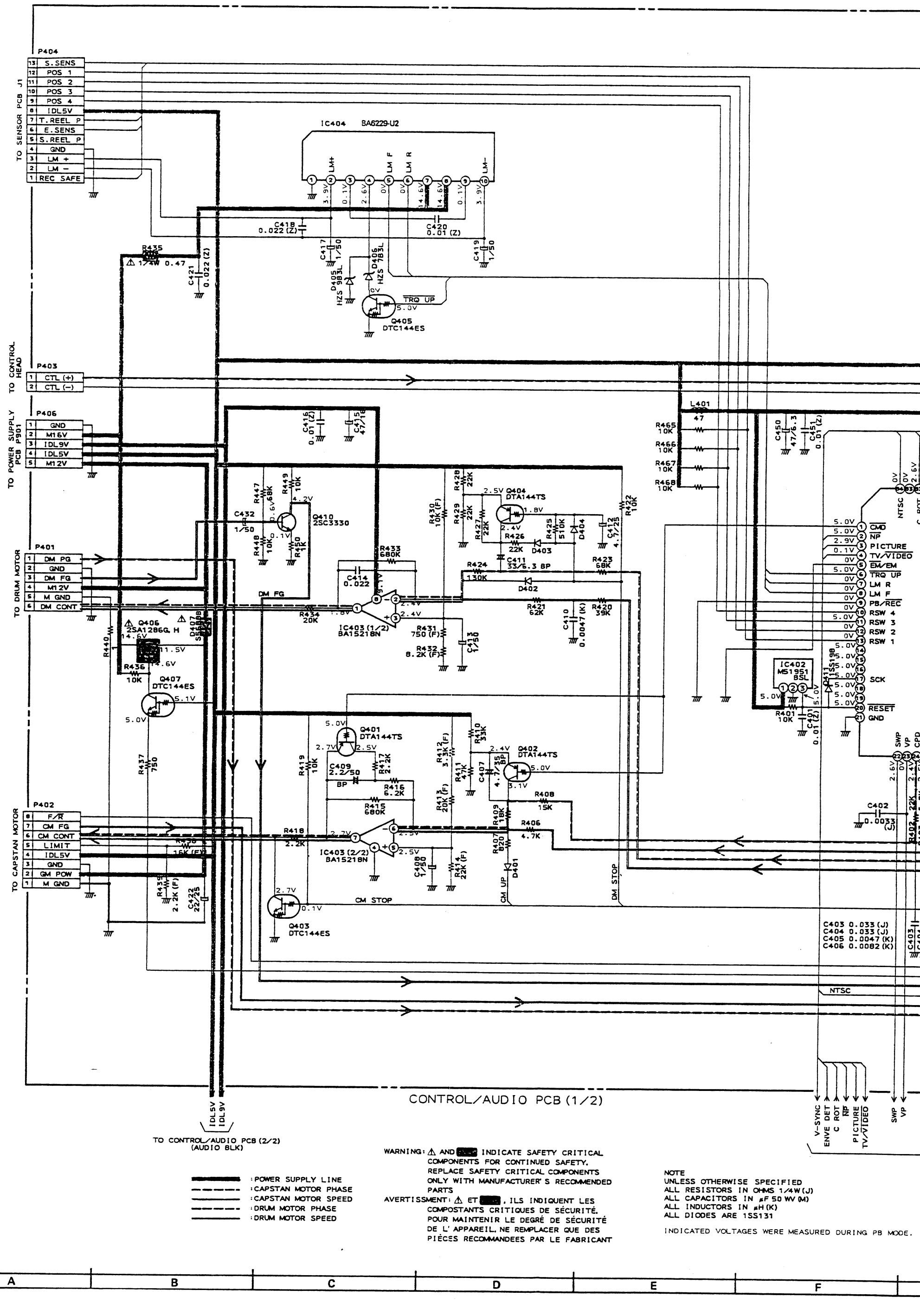
INDICATED VOLTAGES WERE MEASURED IN STOP MODE.
(CONNECT DC VOLTMETER'S NEGATIVE INPUT TO 'POINT Ⓐ (SHOWN ABOVE) WHEN MEASURING THE PRIMARY SECTION'S VOLTAGES.)

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W (J)
ALL CAPACITORS IN μF 50WV (M)
ALL INDUCTORS IN μH (K)

: B (POWER SUPPLY) LINE


CONTROL/AUDIO PCB
P801
FF
PLAY
CENTER
REC
REW
REPEAT
IDL5V
POWER
GND
STBY
REMOCON
KEY
P405
P406
GND
M16V
IDL9V
IDL5V
M12V
P401
DM PG
GND
DM FG
M12V
M.GND
DM CONT
DRUM MOTOR
P402
F/R
CM FG
CM CONT
LIMIT
IDL5V
GND
CM POWER
M.GND
CAPSTAN MOTOR
R1
62
D2
GL4800
D1
GL451
PTR4
PT493F
P1
POS 4
POS 3
POS 2
POS 1
GND
MODE SELECT SW
P404
J1
S.SENS
POS 1
POS 2
POS 3
POS 4
IDL5V
T.REEL.P
E.SENS
NC
GND
LM+
LM-
REC SAF
PTR2
PT4800
SENSOR (S) PCB
JW2
JW1
PTR1
PN268
P403
CTL (+)
CTL (-)
LOADING MOTOR
SENSOR PCB
REC SAFETY SW
WF301
WF302
P102
P103
IDL5V
REC S 9V
IDL9V
GND
EE
NTSC
TRICK
PB
VP
SWP
TV/VIDEO
PICTURE
NP
C ROT
ENVE DET
V-SYNC
GND
A IN
A OUT
BIAS (-)
BIAS (+)
P303
FE
GND
P302
SE
GND
A.PB
A.REC
P301
P1
A.REC
A.PB
GND
SE
CTL (-)
CTL (+)
AUDIO R/P HEAD
SIDE TRACK ERASE HEAD
CTL HEAD
A/C HEAD PCB
FE
GND
FULL ERASE HEAD
MESECAM
PAL
SW101
P901
GND
M16V
IDL9V
IDL5V
M12V
C918 47/25
C917 47/25
V.IN
A.IN
V.OUT
A.OUT
PJ101
VIDEO PCB
P101
P2
ENVE DET
REC-S 9V
REC Y
PB 5V
PB Y
REC C
SWP
PB LC
GND
NTSC
C-SYNC
MESECAM
PRE AMP PCB
P1
NC
CH-1 PB
CH-1 REC
NC
CH-2 PB
CH-2 REC
VIDEO HEADS
ANT IN
RF OUT
RF CONVERTER
MOD.B
NC
+B
A IN
V IN
WARNING: ⚠ AND [redacted] INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER' S RECOMMENDED PARTS
AVERTISSMENT: ⚠ ET [redacted], ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L' APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

6. CONTROL SCHEMATIC DIAGRAM



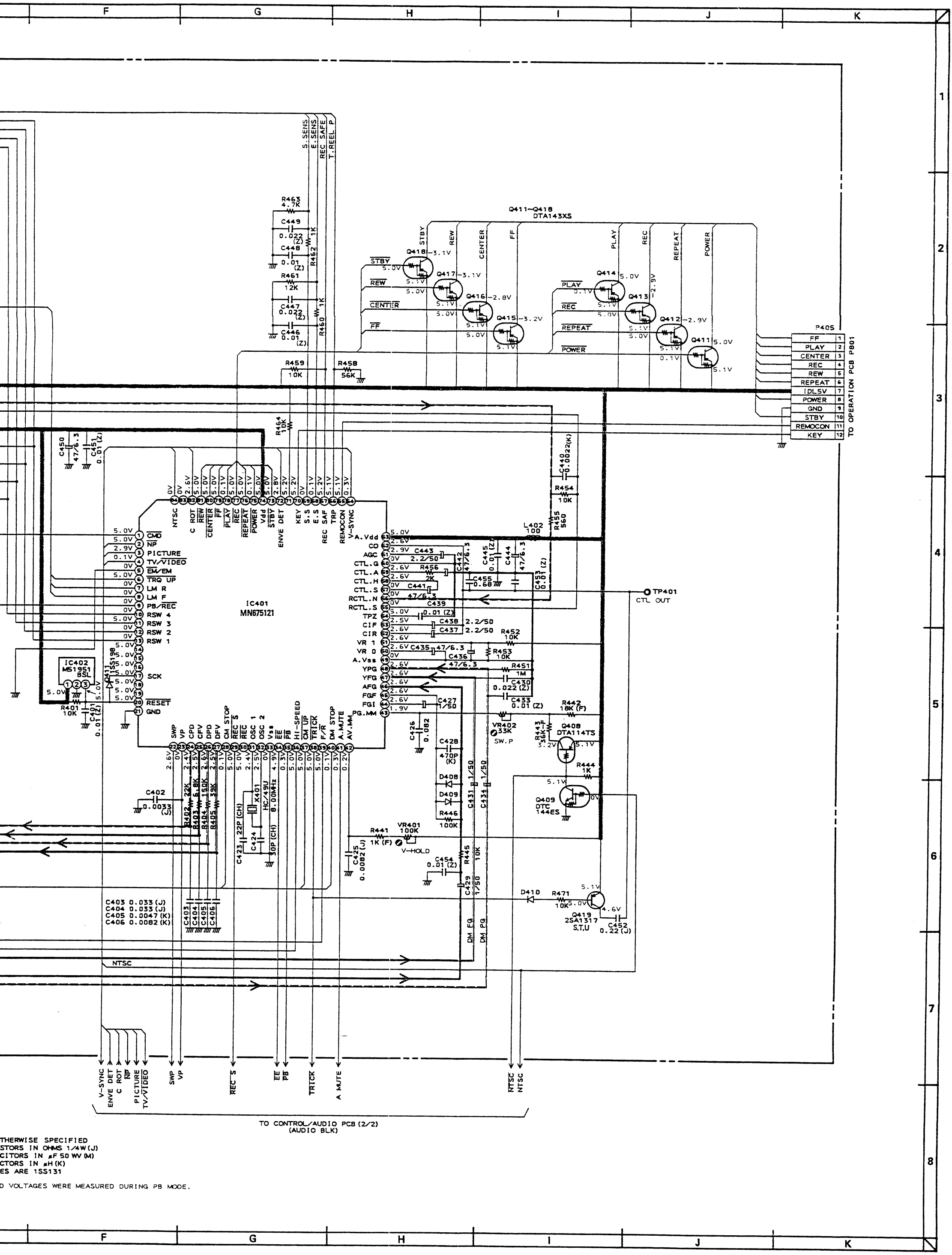
:POWER SUPPLY LINE
:CAPSTAN MOTOR PHASE
:CAPSTAN MOTOR SPEED
:DRUM MOTOR PHASE
:DRUM MOTOR SPEED

WARNING: ⚠ AND [redacted] INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSMENT: ⚠ ET [redacted], ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W (J)
ALL CAPACITORS IN μF 50 WV (M)
ALL INDUCTORS IN μH (K)
ALL DIODES ARE 1SS131

INDICATED VOLTAGES WERE MEASURED DURING PB MODE.



THERWISE SPECIFIED
STORS IN OHMS 1/4W(J)
CITORS IN μF 50 WV (M)
CTORS IN μH(K)
ES ARE 1SS131

D VOLTAGES WERE MEASURED DURING PB MODE.

7. CONTROL/AUDIO CIRCUIT BOARD

PRINCIPAL PARTS LOCATION

ICS

IC301 ..... F,G1
IC401 ..... B1,2
IC402 ..... B2
IC403 ..... E1,2
IC404 ..... D2

CONNECTORS

P301 ..... G2
P302 ..... F2
P303 ..... G1
P401 ..... D,E1
P402 ..... C1
P403 ..... C1
P404 ..... B1
P405 ..... A1,2
P406 ..... D1

WFS

WF301 ..... E1
WF302 ..... F1

TRANSISTORS

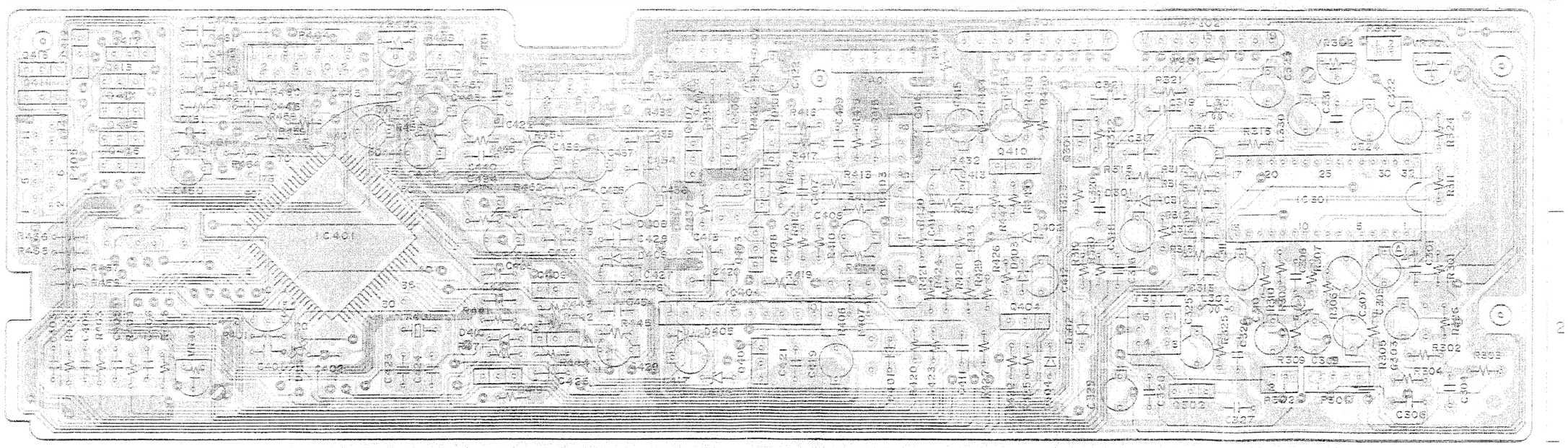
Q301 ..... E1
Q302 ..... F2
Q401 ..... D1
Q402 ..... D1
Q403 ..... D2
Q404 ..... E2
Q405 ..... D2
Q406 ..... C2
Q407 ..... D1
Q408 ..... C2
Q409 ..... C2
Q410 ..... E1
Q411 ..... A1
Q412 ..... A1
Q413 ..... A1
Q414 ..... A1
Q415 ..... A1
Q416 ..... A1
Q417 ..... A1
Q418 ..... A1
Q419 ..... C2

ADJUSTMENTS

VR301 ..... G1
VR302 ..... G1
VR401 ..... A2
VR402 ..... B1

TEST POINT

TP401 ..... C1

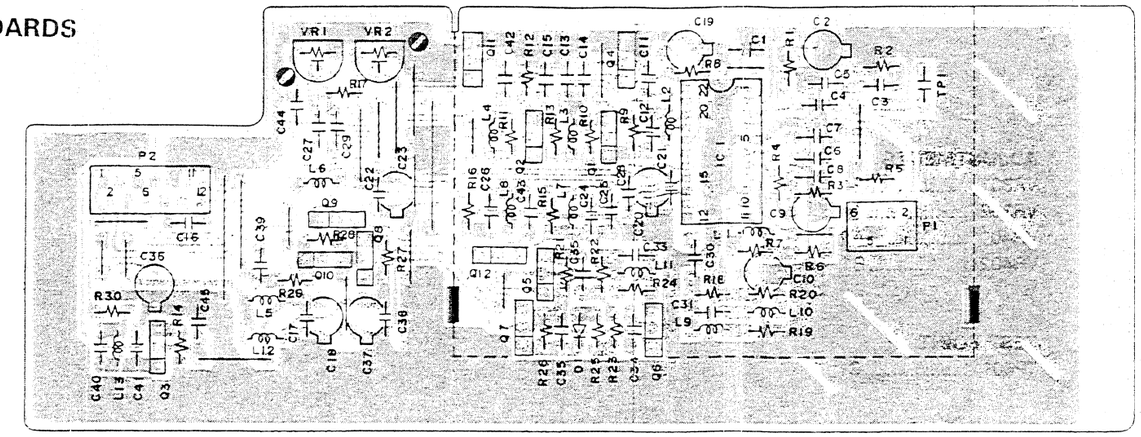


CONTROL / AUDIO PCB

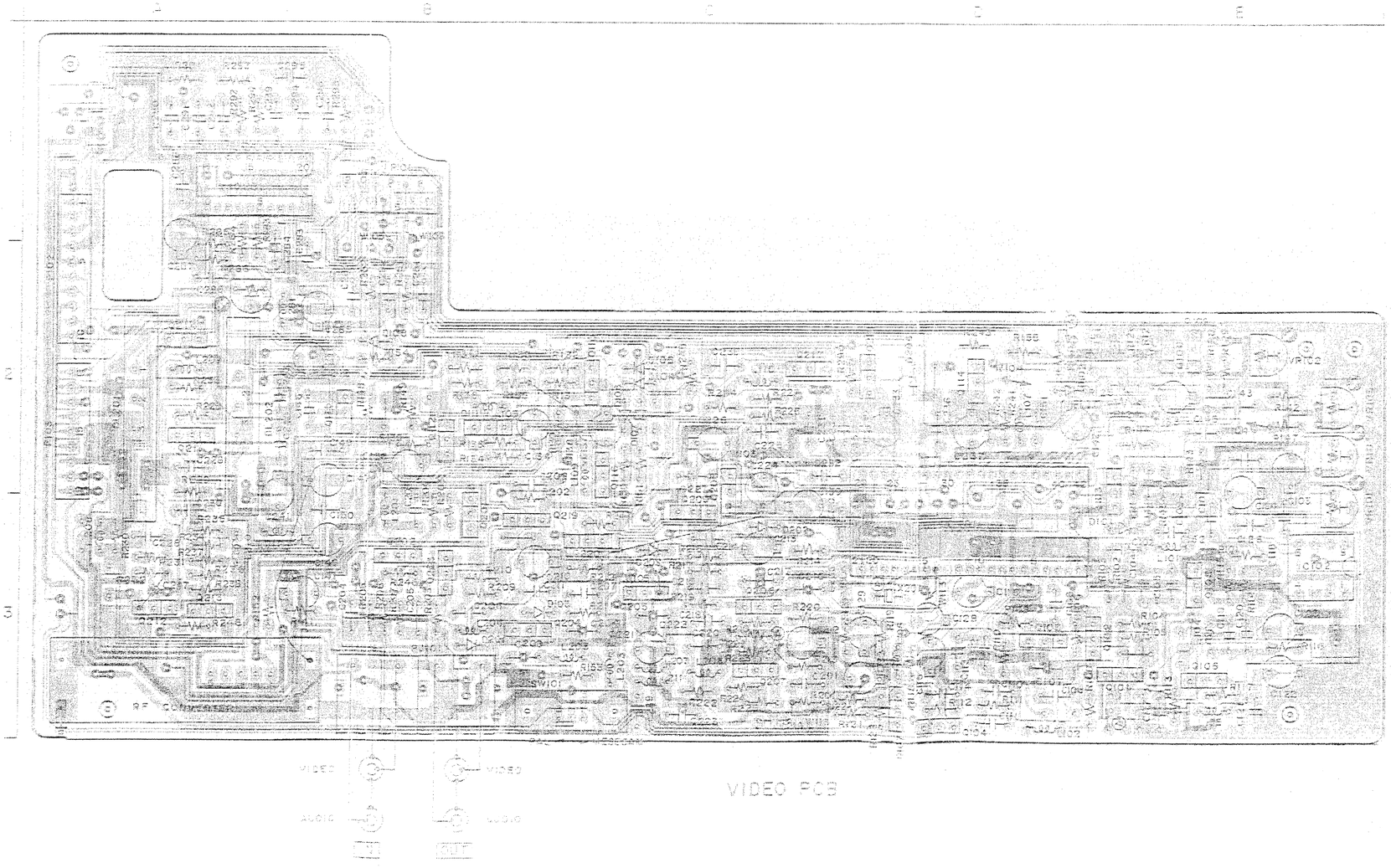
WARNING: ⚠ INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY.
REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠ IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ.
POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL.
NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

8. PRE AMP & VIDEO CIRCUIT BOARDS



PRE AMP PCB



VIDEO PCB

PRINCIPAL PARTS LOCATION

ICS

IC101	D2,3
IC102	E3
IC281	A,B1

CONNECTORS

P101	B1
P102	A1,2
P103	A2

COMB FILTERS

DL201	A2
DL202	A2

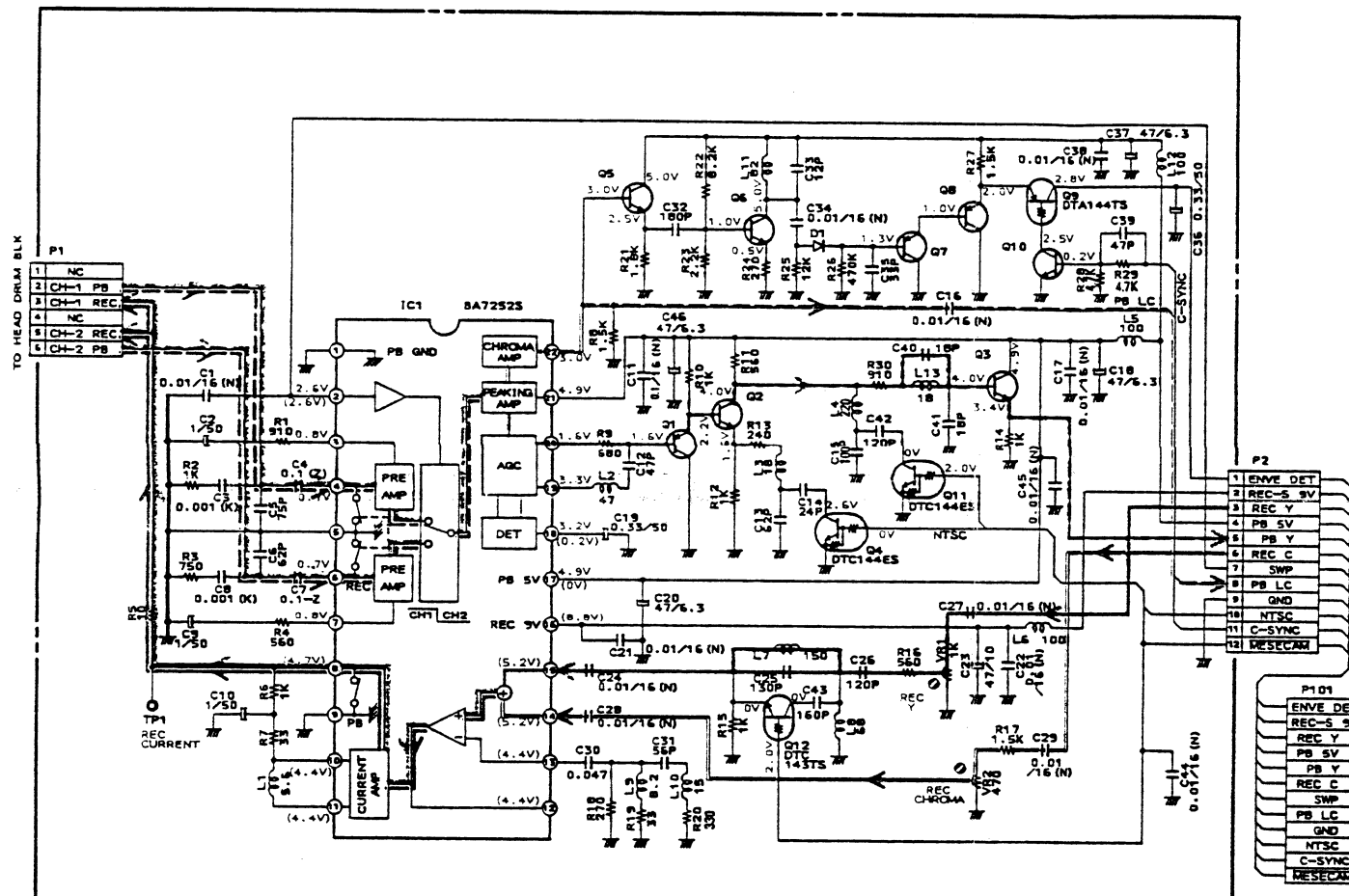
TRANSISTORS

Q101	E3
Q102	E3
Q103	D3
Q104	D3
Q105	E3
Q106	E3
Q107	D3
Q108	E2
Q109	E2
Q110	C2
Q111	B2
Q112	B2
Q113	E2
Q114	D2
Q115	B2
Q116	C2
Q201	B3
Q202	B3
Q203	B3
Q204	B3
Q205	C3
Q206	C3
Q207	C3
Q208	C2
Q209	C3
Q211	A2
Q212	A3
Q213	A3
Q214	A2
Q217	C2
Q218	C2
Q219	B3
Q220	C3

ADJUSTMENTS

VR101	E3
VR102	E2
VR103	E2
VR104	E2
VR281	A2

9. VIDEO, AUDIO & PRE AMP SCHEMATIC DIAGRAM

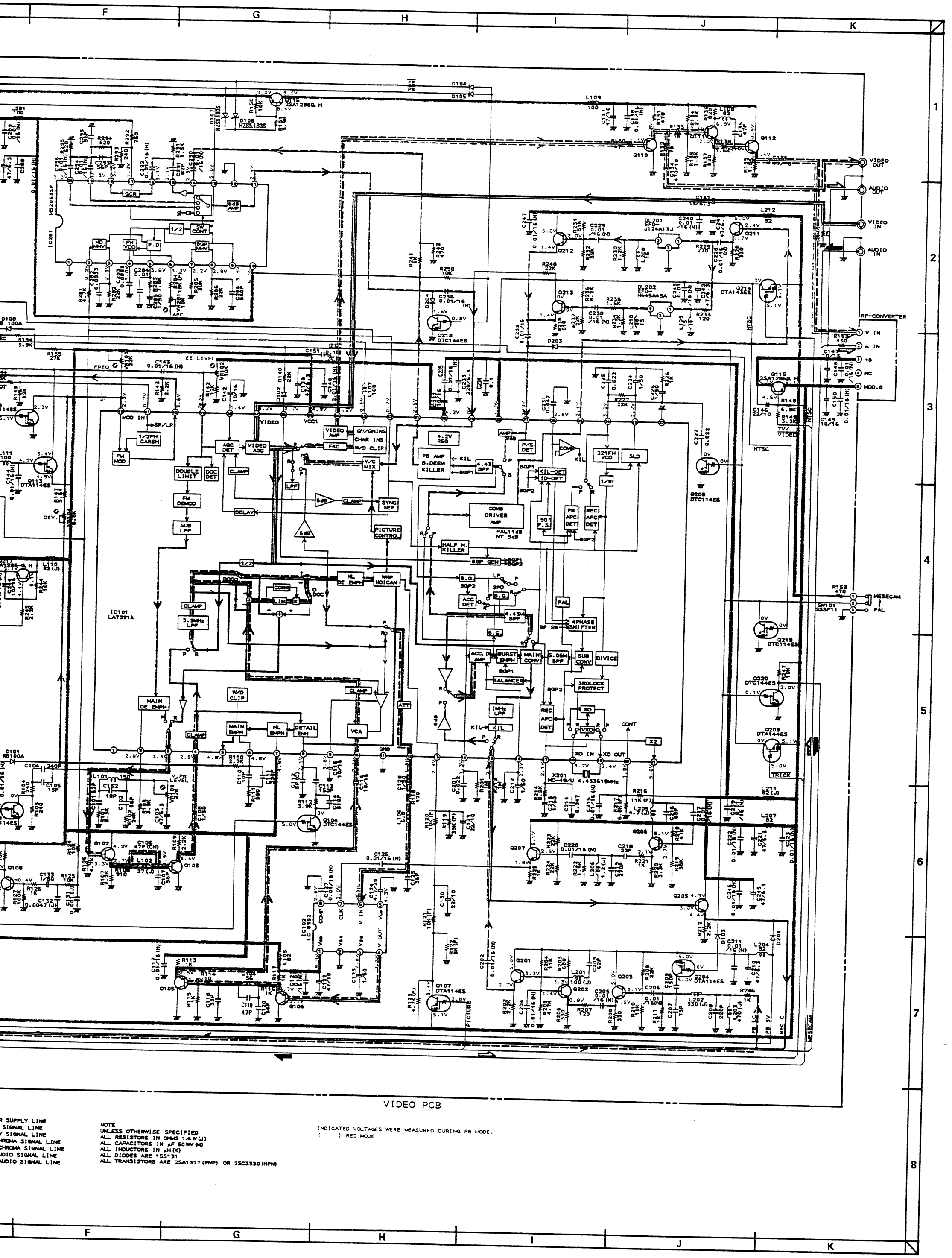


PRE AMP PCB

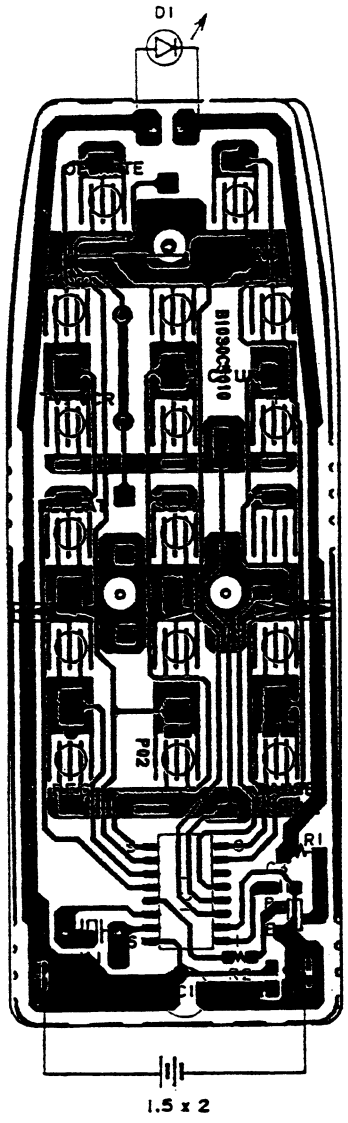
CONTROL/AUDIO PCB (2/2)

: POWER SUPPLY LINE
: PB Y SIGNAL LINE
: REC Y SIGNAL LINE
: PB CHROMA SIGNAL LINE
: REC CHROMA SIGNAL LINE
: PB AUDIO SIGNAL LINE
: REC AUDIO SIGNAL LINE

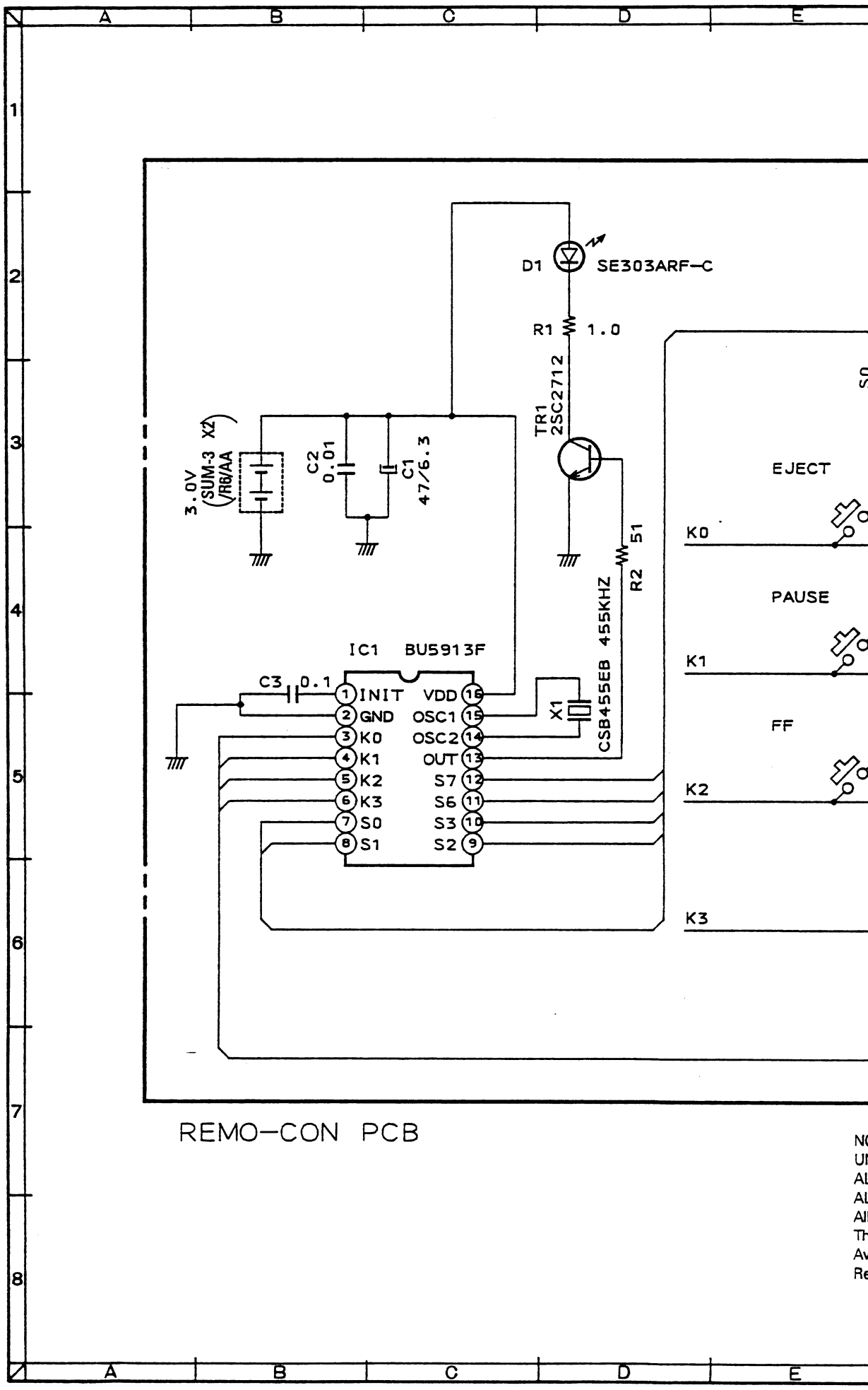
NOTE
UNLESS OTHERWISE
ALL RESISTORS IN
ALL CAPACITORS I
ALL INDUCTORS IN
ALL DIODES ARE 1
ALL TRANSISTORS


IC101 LA7391A
IC102 LC 8992
IC201 M52063SP
VIDEO PCB
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4 W (J)
ALL CAPACITORS IN μF 50 WV (K)
ALL INDUCTORS IN μH (K)
ALL DIODES ARE 1SS131
ALL TRANSISTORS ARE 2SA1317 (PNP) OR 2SC3330 (NPN)
INDICATED VOLTAGES WERE MEASURED DURING PB MODE.
( ) : REC MODE
V. PB LEVEL
EE LEVEL
FREQ
VIDEO OUT
AUDIO OUT
VIDEO IN
AUDIO IN
RF-CONVERTER
MESECAM
PAL
NTSC
TV/VIDEO
PICTURE
REC C
PB SV
PB LC
MESECAM

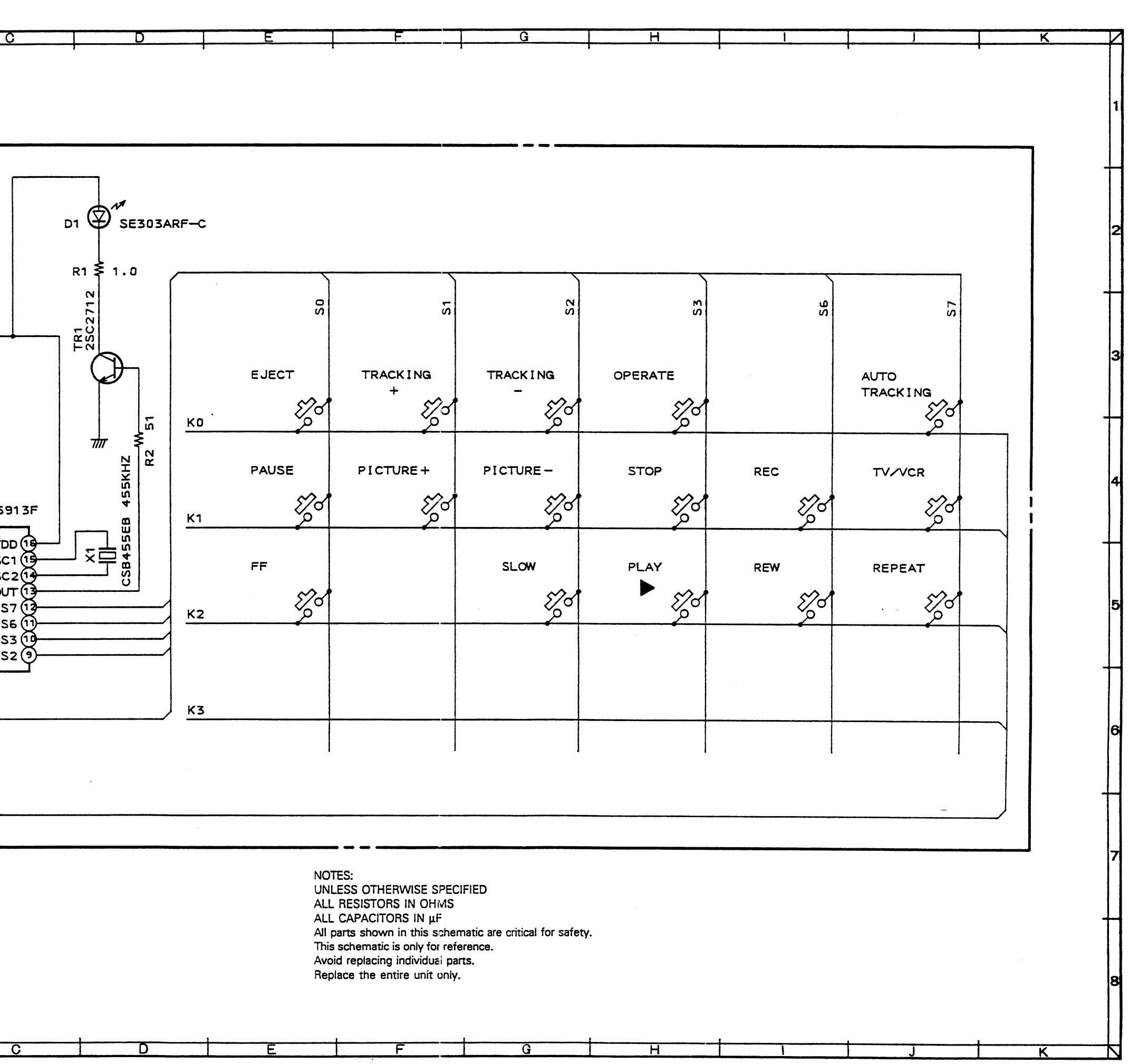
10. REMOTE CONTROL SCHEMATIC DIAGRAM & CIRCUIT BOARD



REMO-CON PCB



REMO-CON PCB



NOTES:
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS
ALL CAPACITORS IN µF
All parts shown in this schematic are critical for safety.
This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

SECTION 4
EXPLODED VIEWS AND PARTS LIST

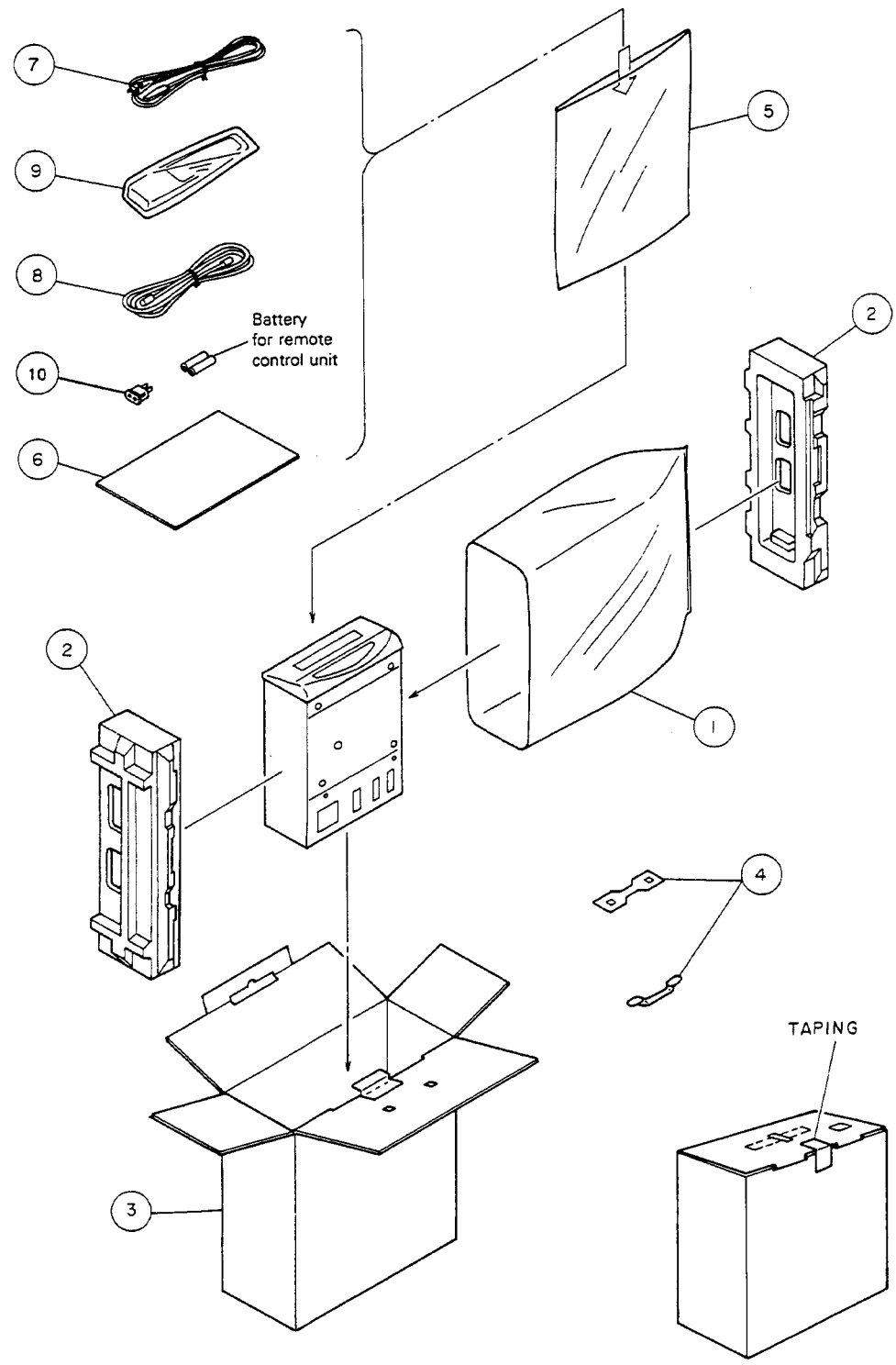
SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

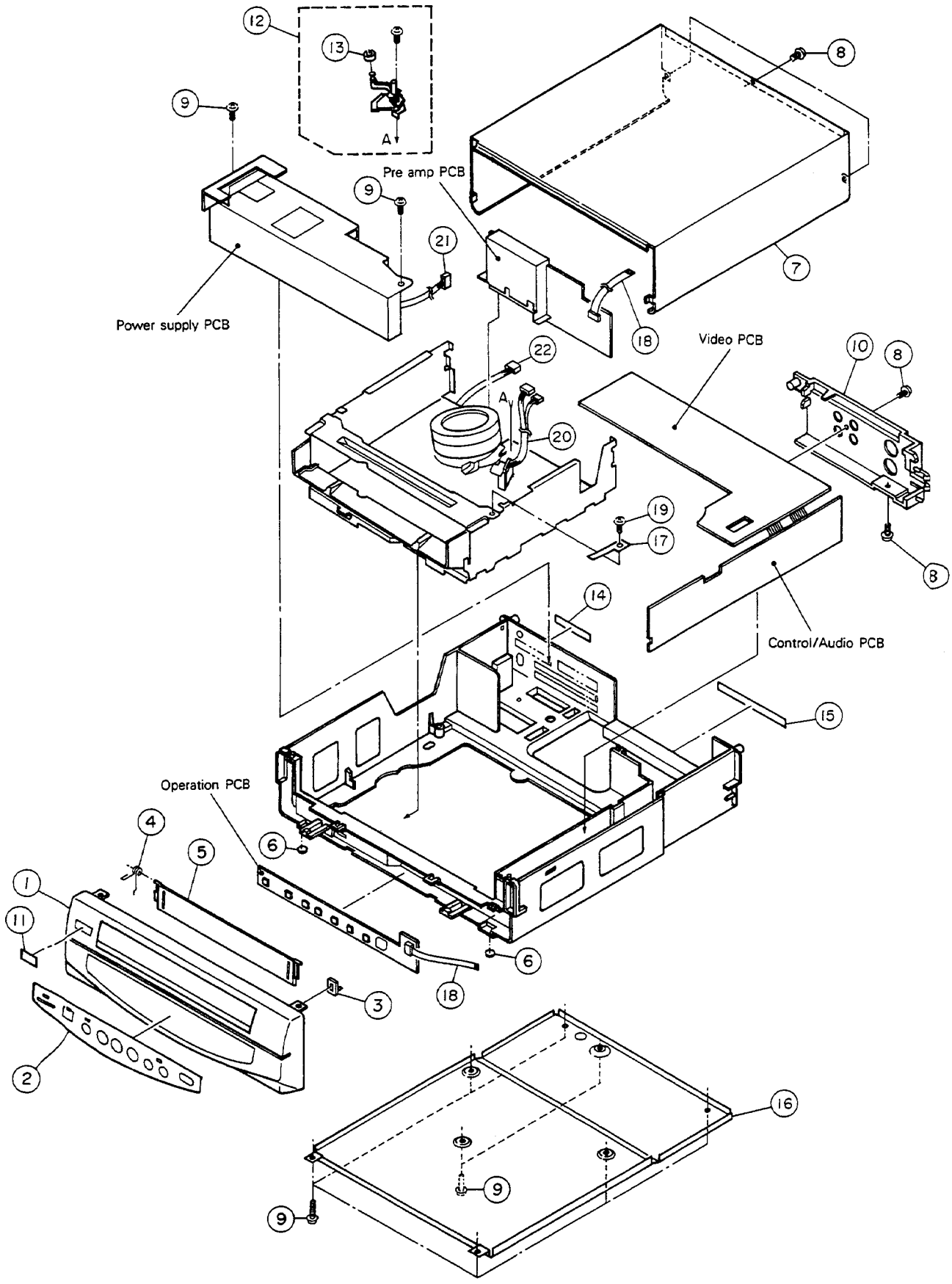
NOTES:

- **<M > indicates mechanical symbol number.**

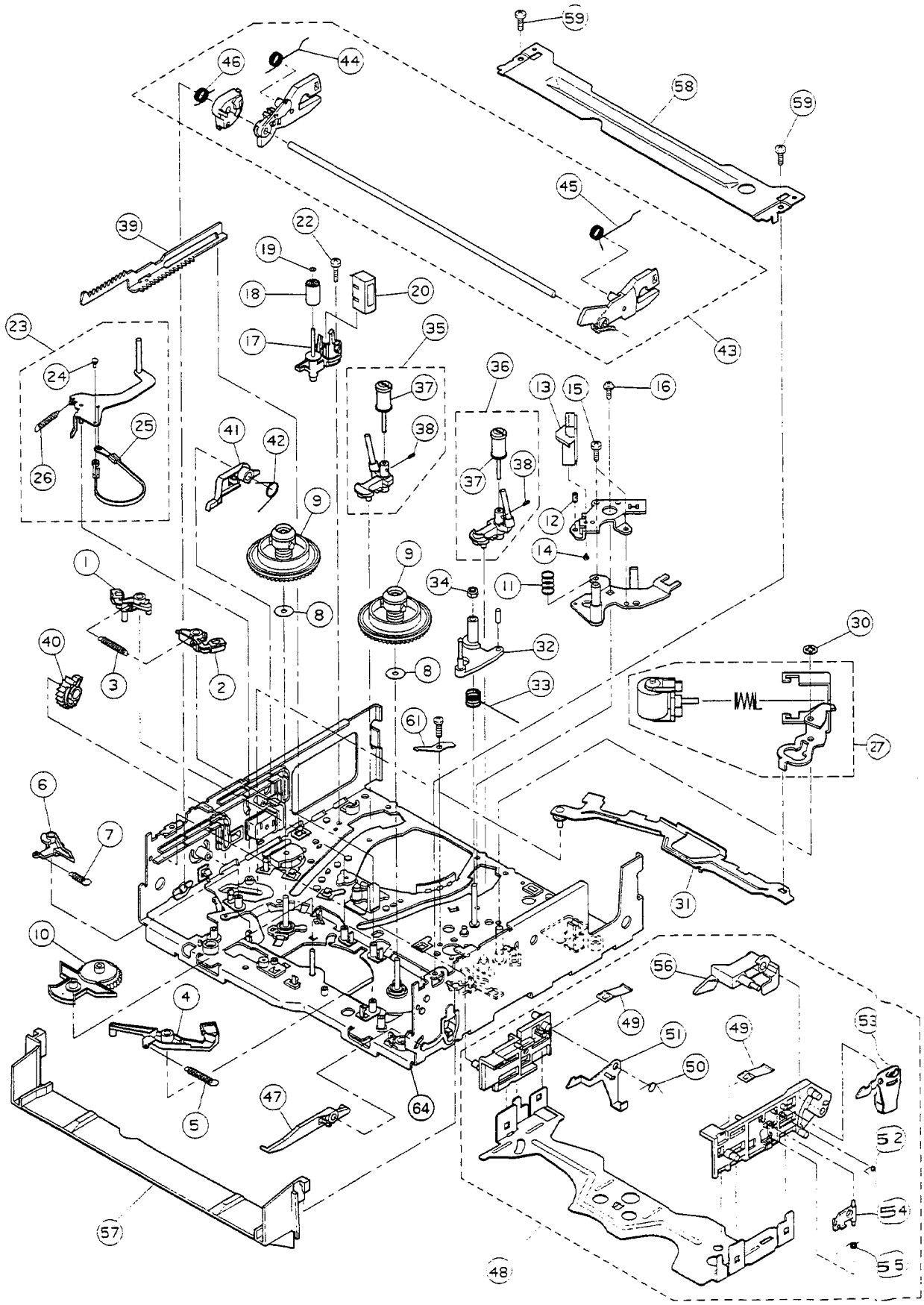
1. PACKING ASSEMBLY <M1>



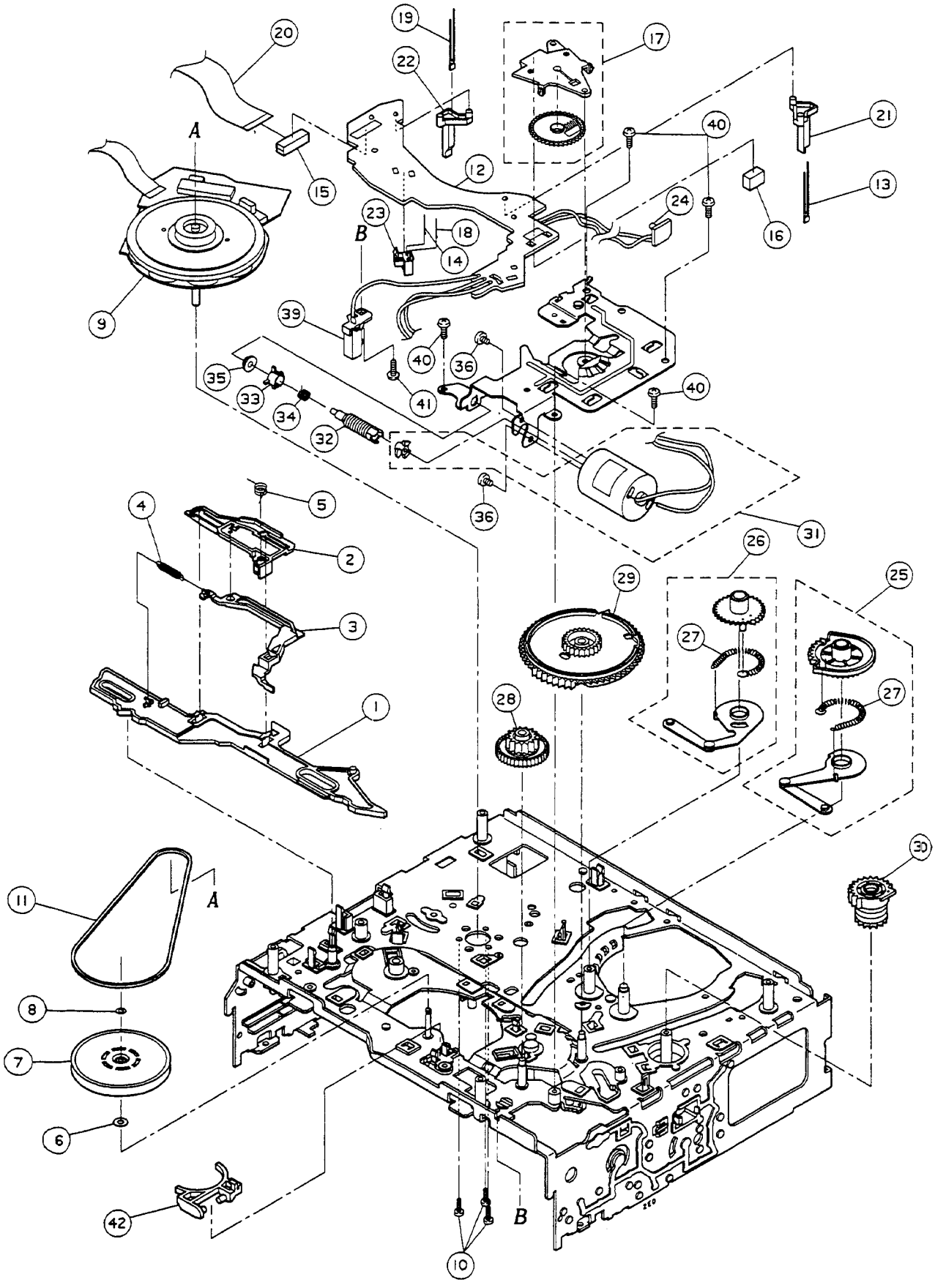
2. FINAL ASSEMBLY <M2>



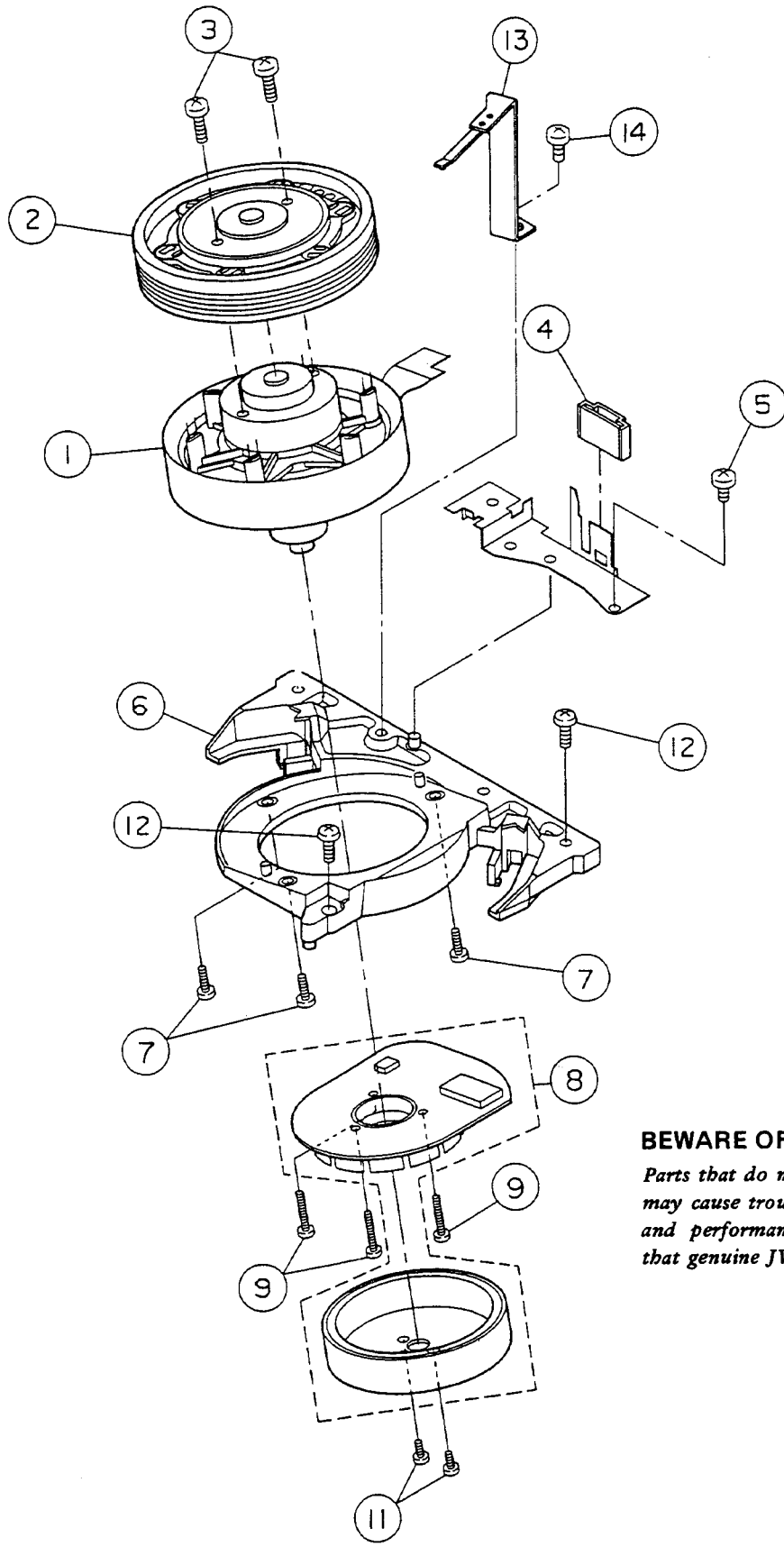
3. MECHANISM ASSEMBLY 1 <M3>



4. MECHANISM ASSEMBLY 2 <M4>



5. HEAD DRUM ASSEMBLY <M5>



BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

PACKING ASSEMBLY <M1>

	1	PZZZ-751827J	PACKING BAG
	2	PZZZ-751825J	CUSHION ASSEMBLY
	3	PZZZ-751824J	PACKING CASE
	4	PZZZ-751826J	HANDLE
	5	PZZZ-383107J	POLY BAG,BLUE
⚠	6	PZZZ-408211J	INSTRUCTIONS
⚠	7	PZEW-732868J	AC CORD(E)
	8	PZEW-348414	PAL CORD (RF antenna cable)
⚠	9	PZAV-B1030A010D	REMOTE CONTROL UNIT
⚠	10	PZAX-359649	PLUG ADAPTOR, for Saudi Arabia model.

FINAL ASSEMBLY <M2>

⚠	1	PZSP-732984J	FRONT PANEL
	2	PZSE-732985J	OPERATION PLATE
	3	PZSZ-732873J	STOPPER
	4	PZZG-387370J	TORSION SPRING
	5	PZSE-408197J	CASSETTE MASK
	6	PZSA-387507J	FOOT,X2
⚠	7	PZSP-732983J	UPPER COVER
	8	PZZS-331182	SCREW,X5
	9	PZZS-376521	SCREW,X8
⚠	10	PZSP-732848J	REAR PANEL
	11	PZSM-409690J	NAME PLATE,JVC MARK
	12	PZHZ-V1134A190A	HEAD CLEANER BLOCK
	13	PZHZ-408196J	CLEANER ROLLER
⚠	14	PZSZ-732986J	AC LABEL
	15	PZSZ-732987J	NAME LABEL
⚠	16	PZSP-732989J	BOTTOM PLATE
	17	PZZG-392294J	EARTH PLATE
	18	PZEW-733073J	FFC CORD
	19	PZZS-358936	SCREW
	20	PZEW-733075J	WIRE ASSEMBLY
	21	PZEW-733074J	WIRE ASSEMBLY
	22	PZEW-405473J	WIRE ASSEMBLY,DRUM MOTOR

NOTE:
Parts will not be supplied if they are not listed in the parts list, even if they appear on the assembling illustrations with reference No.

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION

MECHANISM ASSEMBLY 1 <M3>

1	PZML-387316J	MAIN BRAKE (S)
2	PZML-387318J	MAIN BRAKE (T)
3	PZZG-387320J	TENSION SPRING
4	PZML-387321J	REVIEW BRAKE
5	PZZG-387323J	TENSION SPRING
6	PZML-387423J	LOADING BRAKE
7	PZZG-387467J	TENSION SPRING
8	PZZW-389814J	POLY WASHER,X2
9	PZMT-407370J	REEL DISK,X2
10	PZMI-387294J	IDLER
11	PZZG-387438J1	COMPRESSION SPRING
12	PZZG-373900	SETSCREW
13	PZHR-405340J	A/C HEAD
14	PZZS-404844J	SCREW
15	PZZS-321298	SCREW,X2
16	PZZS-389853J	SCREW
17	PZMZ-402760J1	HOLDER
18	PZMR-387286J1	IMPEDANCE ROLLER
19	PZZW-374445	SLIT WASHER
20	PZHE-390013J	FE HEAD
21	—	
22	PZZS-336714	SCREW
23	PZBL-V1102A050A	TENSION ARM BLOCK
24	PZSZ-387263J4	HOLDER
25	PZML-390768J4	TENSION BAND
26	PZZG-387272J	TENSION SPRING
27	PZBL-V1102A160A	PINCH ROLLER ARM BLOCK
28	—	
29	—	
30	PZZW-332843	RETAINING RING
31	PZML-387431J1	PINCH SLIDER
32	PZML-387277J3	REVIEW ARM
33	PZZG-387282J	TORSION SPRING
34	PZZW-350839	NYLON NUT,M3
35	PZBV-V1102A070A	LOADING LEADER(S)
36	PZBV-V1102A080A	LOADING LEADER(T)
37	PZVT-387394J1	GUIDE ROLLER,X2
38	PZZS-374458	SETSCREW,X2
39	PZML-387428J	LOADING SLIDER
40	PZMZ-387335J	EJECT GEAR
41	PZML-391745J3	DAMPER ARM
42	PZZG-395567J	TORSION SPRING
43	PZBL-V1102A140A	LOADING ARM BLOCK
44	PZZG-387417J	TORSION SPRING (S)
45	PZZG-387418J	TORSION SPRING (T)
46	PZZG-392831J	TORSION SPRING
47	PZML-387350J1	LID OPENER
48	PZBV-V1102A150A	CASSETTE LOAD BLOCK
49	PZZG-387348J1	PLATE SPRING,X2
50	PZZG-387421J	TORSION SPRING
51	PZML-387345J	DAMPER LEVER (S)

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	52	PZZG-388290J1	TORSION SPRING
	53	PZML-387346J	DAMPER LEVER (T)
	54	PZML-387344J	LOCK RELEASE LEVER
	55	PZZG-387420J1	TORSION SPRING
	56	PZML-387349J2	SHUTTER ARM
	57	PZSE-395554J	FRONT GUIDE
	58	PZMZ-406134J	UPPER PLATE
	59	PZZS-358936	SCREW,X2
	60	—	
	61	PZZG-392294J	PLATE SPRING
	62	—	
	63	—	
	64	PZBB-V1130A020A	MECHANISM DECK BLOCK

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MECHANISM ASSEMBLY 2 <M4>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PZML-387324J1	BRAKE SLIDER
	2	PZML-404944J	TRIGGER SLIDER
	3	PZML-387402J1	TRIGGER LEVER
	4	PZZG-387468J	TENSION SPRING
	5	PZZG-387403J	TORSION SPRING
	6	PZZW-389923J	POLY WASHER
	7	PZMZ-387298J3	CLUTCH DISK
	8	PZZW-387492J	SLIT WASHER
⚠	9	PZBM-400682J1	CAPSTAN MOTOR
	10	PZZS-365149	SCREW,X3
	11	PZMB-387289J	CAPSTAN BELT
	12	PZEA-387496J	SENSOR BOARD ASSEMBLY
	13	PZED-390011J	LE DIODE (D1), GL451
	14	PZED-390012J	LE DIODE (D2), GL4800
	15	PZEJ-387497J	HOUSING SOCKET (PS1)
	16	PZEJ-3818371	SOCKET (P1)
	17	PZES-387465J	MODE SELECT SWITCH (SW1)
	18	PZET-390010J	PHOTO TRANSISTOR (TR2), PT4800
	19	PZET-390009J	PHOTO TRANSISTOR (TR4), PT493F
	20	PZEW-389313J	FFC CORD (WP1)
	21	PZMZ-387430J	LED HOLDER
	22	PZMZ-387445J	START SENSOR HOLDER
	23	PZMZ-387446J	REEL SENSOR HOLDER
	24	PN268	PHOTO TRANSISTOR (TR1)
	25	PZMZ-V1102A090A	TOGGLE GEAR (S)
	26	PZMZ-V1102A100A	TOGGLE GEAR (T)
	27	PZZG-387413J1	TENSION SPRING,X2
	28	PZMZ-387332J	WORM WHEEL GEAR
	29	PZMZ-387331J	CAM GEAR
	30	PZMZ-387333J	FRONT LOADING GEAR
⚠	31	PZBM-387503J	LOADING MOTOR
	32	PZMZ-387330J	WORM GEAR
	33	PZMR-391968J	TRIGGER PULLEY
	34	PZZG-387443J	TRIGGER SPRING
	35	PZMR-387406J	THRUST WORM HOLDER
	36	PZZS-425981	SCREW,X2
	37	—	
	38	—	
	39	PZES-373099	LEAF SWITCH
	40	PZZS-389950J	SCREW,X4
	41	PZZS-358936	SCREW
	42	PZML-387311J2	COUPLING ARM

****

HEAD DRUM ASSEMBLY <M5>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PZBV-V1123A410A	LOWER DRUM BLOCK
	2	PZBV-V1123A420A	UPPER DRUM BLOCK
	3	PZZS-321298	SCREW,X2
	4	PZSZ-387388J	FPC HOLDER
	5	PZZS-358936	SCREW
	6	PZMA-387474J3	DRUM BASE
	7	PZZS-563444	SCREW,X3
	8	PZBM-401296J	DRUM MOTOR
	9	PZZS-467796	SCREW,X3
	10	—	
	11	PZZS-379350	SCREW,X2
	12	PZZS-336714	SCREW,X2
	13	PZVT-401282J	BRUSH
	14	PZZS-389853J	SCREW

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

NOTE: < 2 digits > indicates circuit board symbol number.

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
**********		

MAIN BLOCK < 01 >

PWBA	PZBA-VA033A600C	MAIN P.C. BOARD ASSY
	— VIDEO P.C. BOARD SECTION —	
IC101	PZEI-403234J1	IC
IC102	PZEI-394856J	IC
IC281	PZEI-732508J	IC
Q101	DTC114ES	TRANSISTOR
Q102	PZET-397160J	TRANSISTOR
Q103	PZET-353899	TRANSISTOR
Q104	DTC144ES	TRANSISTOR
Q105	PZET-353899	TRANSISTOR
Q106	PZET-353899	TRANSISTOR
Q107	DTA114ES	TRANSISTOR
Q108	PZET-397160J	TRANSISTOR
Q109	DTC114ES	TRANSISTOR
Q110	PZET-353899	TRANSISTOR
Q111	PZET-397160J	TRANSISTOR
Q112	PZET-397160J	TRANSISTOR
Q113	DTA114ES	TRANSISTOR
Q114	DTC144ES	TRANSISTOR
Q115	PZET-356224	TRANSISTOR
Q116	PZET-356224	TRANSISTOR
Q201	PZET-397160J	TRANSISTOR
Q202	PZET-397160J	TRANSISTOR
Q203	PZET-397160J	TRANSISTOR
Q204	DTA114ES	TRANSISTOR
Q205	PZET-397160J	TRANSISTOR
Q206	PZET-397160J	TRANSISTOR
Q207	PZET-397160J	TRANSISTOR
Q208	DTC114ES	TRANSISTOR
Q209	DTA144ES	TRANSISTOR
Q211	PZET-397160J	TRANSISTOR
Q212	PZET-397160J	TRANSISTOR
Q213	PZET-397160J	TRANSISTOR
Q214	DTA143ES	TRANSISTOR
Q217	PZET-356224	TRANSISTOR
Q218	DTC144ES	TRANSISTOR
Q219	DTC114ES	TRANSISTOR
Q220	DTC144ES	TRANSISTOR
D101	PZED-386226J	SCHOTTKY DIODE
D102	1SS131	SILICON DIODE

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
D103	1SS131	SILICON DIODE
D104	1SS131	SILICON DIODE
D105	1SS131	SILICON DIODE
D106	PZED-386090J	ZENER DIODE
D107	PZED-386090J	ZENER DIODE
D108	PZED-386226J	SCHOTTKY DIODE
D201	1SS131	SILICON DIODE
D202	1SS131	SILICON DIODE
D203	1SS131	SILICON DIODE
D204	1SS131	SILICON DIODE
R101	PZER-733018J	C RESISTOR 3.3KΩ,1/4W
R102	PZER-733055J	C RESISTOR 24KΩ,1/4W
R103	PZER-733019J	C RESISTOR 3.9KΩ,1/4W
R104	PZER-733037J	C RESISTOR 240Ω,1/4W
R105	PZER-733037J	C RESISTOR 240Ω,1/4W
R106	PZER-733020J	C RESISTOR 4.7KΩ,1/4W
R107	PZER-733016J	C RESISTOR 2.2KΩ,1/4W
R108	PZER-733047J	C RESISTOR 910Ω,1/4W
R109	PZER-733016J	C RESISTOR 2.2KΩ,1/4W
R110	PZER-733017J	C RESISTOR 2.7KΩ,1/4W
R111	PZER-733009J	C RESISTOR 560Ω,1/4W
R112	PZER-733019J	C RESISTOR 3.9KΩ,1/4W
R113	PZER-733012J	C RESISTOR 1KΩ,1/4W
R114	PZER-732996J	C RESISTOR 10Ω,1/4W
R115	PZER-733012J	C RESISTOR 1KΩ,1/4W
R116	PZER-733012J	C RESISTOR 1KΩ,1/4W
R117	PZER-733012J	C RESISTOR 1KΩ,1/4W
R118	PZER-733008J	C RESISTOR 470Ω,1/4W
R119	PZER-323877	MF RESISTOR 39KΩ,1/4W
R120	PZER-319218	MF RESISTOR 10KΩ,1/4W
R121	PZER-319218	MF RESISTOR 10KΩ,1/4W
R122	PZER-314603	MF RESISTOR 3KΩ,1/4W
R123	PZER-311757	MF RESISTOR 4.7KΩ,1/4W
R124	PZER-733024J	C RESISTOR 10KΩ,1/4W
R125	PZER-733024J	C RESISTOR 10KΩ,1/4W
R126	PZER-733012J	C RESISTOR 1KΩ,1/4W
R127	PZER-733036J	C RESISTOR 100KΩ,1/4W
R128	PZER-733024J	C RESISTOR 10KΩ,1/4W
R129	PZER-733024J	C RESISTOR 10KΩ,1/4W
R130	PZER-732998J	C RESISTOR 47Ω,1/4W
R131	PZER-733008J	C RESISTOR 470Ω,1/4W
R132	PZER-732999J	C RESISTOR 75Ω,1/4W
R133	PZER-733012J	C RESISTOR 1KΩ,1/4W
R134	PZER-733017J	C RESISTOR 2.7KΩ,1/4W
R135	PZER-733015J	C RESISTOR 1.8KΩ,1/4W
R136	PZER-733011J	C RESISTOR 820Ω,1/4W
R137	PZER-733011J	C RESISTOR 820Ω,1/4W
R138	PZER-733049J	C RESISTOR 1.6KΩ,1/4W
R139	PZER-733014J	C RESISTOR 1.5KΩ,1/4W
R140	PZER-733028J	C RESISTOR 22KΩ,1/4W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R141	PZER-732999J	C RESISTOR	75Ω,1/4W
R142	PZER-733025J	C RESISTOR	12KΩ,1/4W
R143	PZER-733016J	C RESISTOR	2.2KΩ,1/4W
R144	PZER-733030J	C RESISTOR	33KΩ,1/4W
R145	PZER-733025J	C RESISTOR	12KΩ,1/4W
R147	PZER-733021J	C RESISTOR	5.6KΩ,1/4W
R148	PZER-733022J	C RESISTOR	6.8KΩ,1/4W
R149	PZER-733018J	C RESISTOR	3.3KΩ,1/4W
R150	PZER-733024J	C RESISTOR	10KΩ,1/4W
R151	PZER-733019J	C RESISTOR	3.9KΩ,1/4W
R152	PZER-733006J	C RESISTOR	330Ω,1/4W
R153	PZER-733008J	C RESISTOR	470Ω,1/4W
R154	PZER-733019J	C RESISTOR	3.9KΩ,1/4W
R155	PZER-733029J	C RESISTOR	27KΩ,1/4W
R201	PZER-733000J	C RESISTOR	1MΩ,1/4W
R202	PZER-733016J	C RESISTOR	2.2KΩ,1/4W
R203	PZER-733010J	C RESISTOR	680Ω,1/4W
R204	PZER-733053J	C RESISTOR	11KΩ,1/4W
R205	PZER-733020J	C RESISTOR	4.7KΩ,1/4W
R206	PZER-733006J	C RESISTOR	330Ω,1/4W
R207	PZER-733001J	C RESISTOR	120Ω,1/4W
R208	PZER-733006J	C RESISTOR	330Ω,1/4W
R209	PZER-733028J	C RESISTOR	22KΩ,1/4W
R210	PZER-733027J	C RESISTOR	18KΩ,1/4W
R211	PZER-733012J	C RESISTOR	1KΩ,1/4W
R212	PZER-733016J	C RESISTOR	2.2KΩ,1/4W
R213	PZER-733000J	C RESISTOR	1MΩ,1/4W
R214	PZER-733023J	C RESISTOR	8.2KΩ,1/4W
R216	PZER-357867	MF RESISTOR	11KΩ,1/4W
R217	PZER-318337	MF RESISTOR	6.8KΩ,1/4W
R218	PZER-733032J	C RESISTOR	47KΩ,1/4W
R219	PZER-733033J	C RESISTOR	56KΩ,1/4W
R220	PZER-733018J	C RESISTOR	3.3KΩ,1/4W
R221	PZER-733012J	C RESISTOR	1KΩ,1/4W
R222	PZER-733014J	C RESISTOR	1.5KΩ,1/4W
R223	PZER-733028J	C RESISTOR	22KΩ,1/4W
R224	PZER-733028J	C RESISTOR	22KΩ,1/4W
R225	PZER-733012J	C RESISTOR	1KΩ,1/4W
R226	PZER-733012J	C RESISTOR	1KΩ,1/4W
R227	PZER-733028J	C RESISTOR	22KΩ,1/4W
R228	PZER-733006J	C RESISTOR	330Ω,1/4W
R229	PZER-733005J	C RESISTOR	270Ω,1/4W
R230	PZER-733013J	C RESISTOR	1.2KΩ,1/4W
R231	PZER-733007J	C RESISTOR	51KΩ,1/4W
R232	PZER-733031J	C RESISTOR	39KΩ,1/4W
R233	PZER-733001J	C RESISTOR	120Ω,1/4W
R234	PZER-733013J	C RESISTOR	1.2KΩ,1/4W
R235	PZER-733014J	C RESISTOR	1.5KΩ,1/4W
R236	PZER-733023J	C RESISTOR	8.2KΩ,1/4W
R237	PZER-733028J	C RESISTOR	22KΩ,1/4W
R238	PZER-733041J	C RESISTOR	510Ω,1/4W
R241	PZER-733012J	C RESISTOR	1KΩ,1/4W
R242	PZER-733008J	C RESISTOR	470Ω,1/4W
R244	PZER-733024J	C RESISTOR	10KΩ,1/4W
R245	PZER-733016J	C RESISTOR	2.2KΩ,1/4W
R246	PZER-733012J	C RESISTOR	1KΩ,1/4W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R247	PZER-733024J	C RESISTOR	10KΩ,1/4W
R248	PZER-733028J	C RESISTOR	22KΩ,1/4W
R281	PZER-733020J	C RESISTOR	4.7KΩ,1/4W
R282	PZER-733028J	C RESISTOR	22KΩ,1/4W
R283	PZER-733052J	C RESISTOR	7.5KΩ,1/4W
R284	PZER-325291	MF RESISTOR	18KΩ,1/4W
R285	PZER-733056J	C RESISTOR	30KΩ,1/4W
R286	PZER-733028J	C RESISTOR	22KΩ,1/4W
R290	PZER-733024J	C RESISTOR	10KΩ,1/4W
R291	PZER-733014J	C RESISTOR	1.5KΩ,1/4W
R292	PZER-733045J	C RESISTOR	750Ω,1/4W
R293	PZER-733037J	C RESISTOR	240Ω,1/4W
R294	PZER-733043J	C RESISTOR	620Ω,1/4W
R295	PZER-733043J	C RESISTOR	620Ω,1/4W
VR101	PZEV-732649J	V RESISTOR,VIDEO PB LEVEL	22KΩ
VR102	PZEV-732502J	V RESISTOR,VIDEO EE LEVEL	10KΩ
VR103	PZEV-732649J	V RESISTOR,CARRIER	22KΩ
VR104	PZEV-732501J	V RESISTOR,DEVIATION	6.8KΩ
VR281	PZEV-732506J	V RESISTOR,AFC	10KΩ
C101	PZEC-330334	C CAPACITOR	62pF,50V
C102	PZEC-200488	C CAPACITOR	56pF,50V
C103	PZEC-316793	E CAPACITOR	47μF,6.3V
C104	PZEC-335739	C CAPACITOR	240pF,50V
C105	PZEC-322031	C CAPACITOR	15pF,50V
C106	PZEC-323532	C CAPACITOR	47pF,50V
C107	PZEC-200488	C CAPACITOR	56pF,50V
C108	PZEC-403275J	E CAPACITOR	1μF,50V
C109	PZEC-684718	C CAPACITOR	0.01μF,50V
C110	PZEC-322030	C CAPACITOR	10pF,50V
C111	PZEC-201586	C CAPACITOR	390pF,50V
C112	PZEC-312109	C CAPACITOR	5pF,50V
C113	PZEC-320535	C CAPACITOR	150pF,50V
C114	PZEC-335743	C CAPACITOR	510pF,50V
C115	PZEC-315769	E CAPACITOR	10μF,16V
C116	PZEC-315769	E CAPACITOR	10μF,16V
C117	PZEC-684718	C CAPACITOR	0.01μF,50V
C118	PZEC-200806	C CAPACITOR	33pF,50V
C119	PZEC-335501	C CAPACITOR	4.7pF,50V
C120	PZEC-200488	C CAPACITOR	56pF,50V
C121	PZEC-684718	C CAPACITOR	0.01μF,50V
C122	PZEC-315772	E CAPACITOR	47μF,10V
C123	PZEC-315770	E CAPACITOR	1μF,50V
C124	PZEC-315777	E CAPACITOR	4.7μF,25V
C125	PZEC-322834	C CAPACITOR	36pF,50V
C126	PZEC-684718	C CAPACITOR	0.01μF,50V
C127	PZEC-684718	C CAPACITOR	0.01μF,50V
C128	PZEC-315770	E CAPACITOR	1μF,50V
C129	PZEC-315782	E CAPACITOR	22μF,10V
C130	PZEC-315782	E CAPACITOR	22μF,10V
C131	PZEC-338576	MY CAPACITOR	0.001μF,50V
C132	PZEC-338575	MY CAPACITOR	0.0047μF,50V
C133	PZEC-315770	E CAPACITOR	1μF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C134	PZEC-321178	E CAPACITOR	470μF10V
C135	PZEC-322033	C CAPACITOR	47pF,50V
C136	PZEC-315772	E CAPACITOR	47μF,10V
C137	PZEC-315772	E CAPACITOR	47μF,10V
C138	PZEC-684718	C CAPACITOR	0.01μF,50V
C139	PZEC-316793	E CAPACITOR	47μF,6.3V
C140	PZEC-684718	C CAPACITOR	0.01μF,50V
C141	PZEC-321678	E CAPACITOR	33μF,6.3V
C142	PZEC-328560	E CAPACITOR	10μF,16V
C143	PZEC-684718	C CAPACITOR	0.01μF,50V
C144	PZEC-684718	C CAPACITOR	0.01μF,50V
C146	PZEC-405586J	E CAPACITOR	22μF,10V
C147	PZEC-315769	E CAPACITOR	10μF,16V
C148	PZEC-684718	C CAPACITOR	0.01μF,50V
C149	PZEC-315769	E CAPACITOR	10μF,16V
C150	PZEC-684718	C CAPACITOR	0.01μF,50V
C151	PZEC-347832	C CAPACITOR	0.1μF,25V
C152	PZEC-322509	C CAPACITOR	18pF,50V
C201	PZEC-338574	MY CAPACITOR	0.022μF,50V
C202	PZEC-684718	C CAPACITOR	0.01μF,50V
C203	PZEC-335757	C CAPACITOR	62pF,50V
C204	PZEC-684718	C CAPACITOR	0.01μF,50V
C205	PZEC-684718	C CAPACITOR	0.01μF,50V
C206	PZEC-684718	C CAPACITOR	0.01μF,50V
C207	PZEC-335733	C CAPACITOR	75pF,50V
C208	PZEC-321675	C CAPACITOR	220pF,50V
C209	PZEC-320535	C CAPACITOR	150pF,50V
C210	PZEC-316793	E CAPACITOR	47μF,6.3V
C211	PZEC-684718	C CAPACITOR	0.01μF,50V
C212	PZEC-315770	E CAPACITOR	1μF,50V
C213	PZEC-315770	E CAPACITOR	1μF,50V
C214	PZEC-340005	MMY CAPACITOR	0.047μF,50V
C215	PZEC-684718	C CAPACITOR	0.01μF,50V
C216	PZEC-200492	C CAPACITOR	68pF,50V
C217	PZEC-684718	C CAPACITOR	0.01μF,50V
C218	PZEC-335754	C CAPACITOR	22pF,50V
C219	PZEC-201585	C CAPACITOR	270pF,50V
C220	PZEC-684718	C CAPACITOR	0.01μF,50V
C221	PZEC-316793	E CAPACITOR	47μF,6.3V
C222	PZEC-684718	C CAPACITOR	0.01μF,50V
C223	PZEC-684718	C CAPACITOR	0.01μF,50V
C224	PZEC-315770	E CAPACITOR	1μF,50V
C225	PZEC-338574	MY CAPACITOR	0.022μF,50V
C226	PZEC-315770	E CAPACITOR	1μF,50V
C227	PZEC-338574	MY CAPACITOR	0.022μF,50V
C228	PZEC-684718	C CAPACITOR	0.01μF,50V
C229	PZEC-684718	C CAPACITOR	0.01μF,50V
C230	PZEC-684718	C CAPACITOR	0.01μF,50V
C231	PZEC-335091	MY CAPACITOR	0.047μF,50V
C232	PZEC-684718	C CAPACITOR	0.01μF,50V
C233	PZEC-201447	E CAPACITOR	220μF,6.3V
C234	PZEC-200899	MMY CAPACITOR	0.1μF,50V
C235	PZEC-684718	C CAPACITOR	0.01μF,50V
C236	PZEC-684718	C CAPACITOR	0.01μF,50V
C237	PZEC-328560	E CAPACITOR	10μF,16V
C238	PZEC-684718	C CAPACITOR	0.01μF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C239	PZEC-684718	C CAPACITOR	0.01μF,50V
C240	PZEC-684718	C CAPACITOR	0.01μF,50V
C241	PZEC-316793	E CAPACITOR	47μF,6.3V
C242	PZEC-316793	E CAPACITOR	47μF,6.3V
C243	PZEC-684718	C CAPACITOR	0.01μF,50V
C244	PZEC-392716J	E CAPACITOR	10μF,16V
C245	PZEC-316793	E CAPACITOR	47μF,6.3V
C246	PZEC-684718	C CAPACITOR	0.01μF,50V
C247	PZEC-684718	C CAPACITOR	0.01μF,50V
C282	PZEC-347985	MY CAPACITOR	0.0033μF,50V
C283	PZEC-347985	MY CAPACITOR	0.0033μF,50V
C284	PZEC-338573	MY CAPACITOR	0.01μF,50V
C285	PZEC-315770	E CAPACITOR	1μF,50V
C286	PZEC-201589	C CAPACITOR	560pF,50V
C287	PZEC-316793	E CAPACITOR	47μF,6.3V
C288	PZEC-684718	C CAPACITOR	0.01μF,50V
C289	PZEC-684718	C CAPACITOR	0.01μF,50V
C290	PZEC-684718	C CAPACITOR	0.01μF,50V
C291	PZEC-200483	C CAPACITOR	82pF,50V
C292	PZEC-684718	C CAPACITOR	0.01μF,50V
C293	PZEC-200488	C CAPACITOR	56pF,50V
C294	PZEC-684718	C CAPACITOR	0.01μF,50V
C295	PZEC-200488	C CAPACITOR	56pF,50V
C296	PZEC-684718	C CAPACITOR	0.01μF,50V
L101	PZEO-376605	COIL	150μH
L102	PZEO-381192J	COIL	27μH
L104	PZEO-388161J	COIL	56μH
L105	PZEO-376860	COIL	82μH
L106	PZEO-380734J	COIL	6.8μH
L107	PZEO-376600	COIL	100μH
L108	PZEO-376860	COIL	82μH
L109	PZEO-376600	COIL	100μH
L110	PZEO-345880	COIL	82μH
L111	PZEO-376600	COIL	100μH
L201	PZEO-403270J	COIL	100μH
L202	PZEO-381195J	COIL	330μH
L203	PZEO-381197J	COIL	470μH
L204	PZEO-376860	COIL	82μH
L205	PZEO-403937J	COIL	4.7μH
L206	PZEO-392817J	COIL	1.2μH
L207	PZEO-376860	COIL	82μH
L208	PZEO-376603	COIL	15μH
L209	PZEO-376603	COIL	15μH
L210	PZEO-376603	COIL	15μH
L211	PZEO-345880	COIL	82μH
L212	PZEO-376860	COIL	82μH
L281	PZEO-376600	COIL	100μH
DL201	PZEH-390730J	DELAY LINE	
DL202	PZEH-732509J	DELAY LINE	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	SW101	PZES-730499J	SLIDE SW	
	P101	PZEJ-394841J	SOCKET	12P
	PJ101	PZEJ-732842J	PIN JACK	4P (RCA JACK)
	X201	PZEI-381632J	OSC X'TAL	4.433619MHz
	RF1	PZBV-732844J	RF CONVERTER	

— CONTROL/AUDIO P.C. BOARD SECTION —

IC301	BA7765AS	IC	
IC401	PZEI-732845J	IC	
IC402	PZEI-725303J	IC	
IC403	BA15218N	IC	
IC404	PZEI-397299J	IC	
Q301	PZET-356224	TRANSISTOR	
Q302	PZET-397160J	TRANSISTOR	
Q401	DTA144TS	TRANSISTOR	
Q402	DTA144TS	TRANSISTOR	
Q403	DTC144ES	TRANSISTOR	
Q404	DTA144TS	TRANSISTOR	
Q405	DTC144ES	TRANSISTOR	
⚠ Q406	PZET-356224	TRANSISTOR	
Q407	DTC144ES	TRANSISTOR	
Q408	DTA114TS	TRANSISTOR	
Q409	DTC144ES	TRANSISTOR	
Q410	PZET-397160J	TRANSISTOR	
Q411	DTA143XS	TRANSISTOR	
Q412	DTA143XS	TRANSISTOR	
Q413	DTA143XS	TRANSISTOR	
Q414	DTA143XS	TRANSISTOR	
Q415	DTA143XS	TRANSISTOR	
Q416	DTA143XS	TRANSISTOR	
Q417	DTA143XS	TRANSISTOR	
Q418	DTA143XS	TRANSISTOR	
Q419	PZET-353899	TRANSISTOR	
D301	1SS131	SILICON DIODE	
D302	PZED-378530J	ZENER DIODE	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	D401	1SS131	SILICON DIODE	
	D402	1SS131	SILICON DIODE	
	D403	1SS131	SILICON DIODE	
	D404	1SS131	SILICON DIODE	
	D405	PZED-388368J	ZENER DIODE	
	D406	PZED-387763J	ZENER DIODE	
⚠	D407	PZED-732510J	SILICON DIODE	
	D408	1SS131	SILICON DIODE	
	D409	1SS131	SILICON DIODE	
	D410	1SS131	SILICON DIODE	
	D411	PZED-392779J	SCHOTTKY DIODE	
	R301	PZER-733034J	C RESISTOR	68KΩ,1/4W
	R302	PZER-733004J	C RESISTOR	220Ω,1/4W
	R303	PZER-733042J	C RESISTOR	330KΩ,1.4W
	R304	PZER-733025J	C RESISTOR	12KΩ,1/4W
	R305	PZER-733020J	C RESISTOR	4.7KΩ,1/4W
	R306	PZER-733024J	C RESISTOR	10KΩ,1/4W
	R307	PZER-733011J	C RESISTOR	820Ω,1/4W
	R308	PZER-733032J	C RESISTOR	47KΩ,1/4W
	R309	PZER-733000J	C RESISTOR	1MΩ,1/4W
	R310	PZER-733054J	C RESISTOR	20KΩ,1/4W
	R311	PZER-733018J	C RESISTOR	3.3KΩ,1/4W
	R312	PZER-733036J	C RESISTOR	100KΩ,1/4W
	R313	PZER-733036J	C RESISTOR	100KΩ,1/4W
	R314	PZER-733032J	C RESISTOR	47KΩ,1/4W
	R315	PZER-733012J	C RESISTOR	1KΩ,1/4W
	R316	PZER-733052J	C RESISTOR	7.5KΩ,1/4W
	R317	PZER-733017J	C RESISTOR	2.7KΩ,1/4W
	R318	PZER-733034J	C RESISTOR	68KΩ,1/4W
	R319	PZER-733006J	C RESISTOR	330Ω,1/4W
	R320	PZER-733032J	C RESISTOR	47KΩ,1/4W
	R321	PZER-733032J	C RESISTOR	47KΩ,1/4W
	R322	PZER-733024J	C RESISTOR	10KΩ,1/4W
	R323	PZER-733018J	C RESISTOR	3.3KΩ,1/4W
	R324	PZER-733029J	C RESISTOR	27KΩ,1/4W
	R325	PZER-733031J	C RESISTOR	39KΩ,1/4W
	R326	PZER-732996J	C RESISTOR	10Ω,1/4W
	R401	PZER-733024J	C RESISTOR	10KΩ,1/4W
	R402	PZER-733028J	C RESISTOR	22KΩ,1/4W
	R403	PZER-733022J	C RESISTOR	6.8KΩ,1/4W
	R404	PZER-733038J	C RESISTOR	150KΩ,1/4W
	R405	PZER-733031J	C RESISTOR	39KΩ,1/4W
	R406	PZER-733020J	C RESISTOR	4.7KΩ,1/4W
	R407	PZER-733011J	C RESISTOR	820Ω,1/4W
	R408	PZER-733026J	C RESISTOR	15KΩ,1/4W
	R409	PZER-733027J	C RESISTOR	18KΩ,1/4W
	R410	PZER-733030J	C RESISTOR	33KΩ,1/4W
	R411	PZER-733032J	C RESISTOR	47KΩ,1/4W
	R412	PZER-307651	MF RESISTOR	3.3KΩ,1/4W
	R413	PZER-354494	MF RESISTOR	20KΩ,1/4W
	R414	PZER-326837	MF RESISTOR	22KΩ,1/4W
	R415	PZER-733046J	C RESISTOR	680KΩ,1/4W
	R416	PZER-733051J	C RESISTOR	6.2KΩ,1/4W
	R417	PZER-733016J	C RESISTOR	2.2KΩ,1/4W
	R418	PZER-733016J	C RESISTOR	2.2KΩ,1/4W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R419	PZER-733024J	C RESISTOR	10KΩ,1/4W
R420	PZER-733031J	C RESISTOR	39KΩ,1/4W
R421	PZER-732994J	C RESISTOR	62KΩ,1/4W
R422	PZER-733024J	C RESISTOR	10KΩ,1/4W
R423	PZER-733034J	C RESISTOR	68KΩ,1/4W
R424	PZER-733003J	C RESISTOR	130KΩ,1/4W
R425	PZER-733057J	C RESISTOR	510KΩ,1/4W
R426	PZER-733028J	C RESISTOR	22KΩ,1/4W
R427	PZER-733028J	C RESISTOR	22KΩ,1/4W
R428	PZER-733028J	C RESISTOR	22KΩ,1/4W
R429	PZER-733028J	C RESISTOR	22KΩ,1/4W
R430	PZER-319218	MF RESISTOR	10KΩ,1/4W
R431	PZER-346164	MF RESISTOR	750Ω,1/4W
R432	PZER-318317	MF RESISTOR	8.2KΩ,1/4W
R433	PZER-733046J	C RESISTOR	680KΩ,1/4W
R434	PZER-733054J	C RESISTOR	20KΩ,1/4W
⚠ R435	PZER-400729J	FUSE RESISTOR	0.47Ω,1/4W
R436	PZER-733024J	C RESISTOR	10KΩ,1/4W
R437	PZER-733045J	C RESISTOR	750Ω,1/4W
R438	PZER-353380	MF RESISTOR	16KΩ,1/4W
R439	PZER-318316	MF RESISTOR	2.2KΩ,1/4W
R440	PZER-732995J	C RESISTOR	1Ω,1/4W
R441	PZER-310324	MF RESISTOR	1KΩ,1/4W
R442	PZER-325291	MF RESISTOR	18KΩ,1/4W
R443	PZER-362276	MF RESISTOR	36KΩ,1/4W
R444	PZER-733012J	C RESISTOR	1KΩ,1/4W
R445	PZER-733024J	C RESISTOR	10KΩ,1/4W
R446	PZER-733036J	C RESISTOR	100KΩ,1/4W
R447	PZER-733034J	C RESISTOR	68KΩ,1/4W
R448	PZER-733024J	C RESISTOR	10KΩ,1/4W
R449	PZER-733024J	C RESISTOR	10KΩ,1/4W
R450	PZER-733012J	C RESISTOR	1KΩ,1/4W
R451	PZER-733000J	C RESISTOR	1MΩ,1/4W
R452	PZER-733024J	C RESISTOR	10KΩ,1/4W
R453	PZER-733024J	C RESISTOR	10KΩ,1/4W
R454	PZER-733024J	C RESISTOR	10KΩ,1/4W
R455	PZER-733009J	C RESISTOR	560Ω,1/4W
R456	PZER-733050J	C RESISTOR	2KΩ,1/4W
R458	PZER-733033J	C RESISTOR	56KΩ,1/4W
R459	PZER-733024J	C RESISTOR	10KΩ,1/4W
R460	PZER-733012J	C RESISTOR	1KΩ,1/4W
R461	PZER-733025J	C RESISTOR	12KΩ,1/4W
R462	PZER-733012J	C RESISTOR	1KΩ,1/4W
R463	PZER-733020J	C RESISTOR	4.7KΩ,1/4W
R464	PZER-733024J	C RESISTOR	10KΩ,1/4W
R465	PZER-733024J	C RESISTOR	10KΩ,1/4W
R466	PZER-733024J	C RESISTOR	10KΩ,1/4W
R467	PZER-733024J	C RESISTOR	10KΩ,1/4W
R468	PZER-733024J	C RESISTOR	10KΩ,1/4W
R471	PZER-733024J	C RESISTOR	10KΩ,1/4W
R472	PZER-733015J	C RESISTOR	1.8KΩ,1/4W
VR301	PZEV-732505J	V RESISTOR,AUDIO PB LEVEL	4.7KΩ
VR302	PZEV-732504J	V RESISTOR,AUDIO REC BIAS	47KΩ
VR401	PZEV-725302J	V RESISTOR,VERTICAL STABILITY	100KΩ

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
VR402	PZEV-732843J	V RESISTOR,PB SWITCHING POINT	33KΩ
C301	PZEC-325518	C CAPACITOR	0.001μF,50V
C302	PZEC-315770	E CAPACITOR	1μF,50V
C303	PZEC-315782	E CAPACITOR	22μF,10V
C304	PZEC-338573	MY CAPACITOR	0.01μF,50V
C305	PZEC-315770	E CAPACITOR	1μF,50V
C306	PZEC-323870	C CAPACITOR	0.0056μF,50V
C307	PZEC-315770	E CAPACITOR	1μF,50V
C308	PZEC-325518	C CAPACITOR	0.001μF,50V
C309	PZEC-315770	E CAPACITOR	1μF,50V
C310	PZEC-316793	E CAPACITOR	47μF,6.3V
C311	PZEC-315777	E CAPACITOR	4.7μF,25V
C312	PZEC-322028	C CAPACITOR	100pF,50V
C313	PZEC-322028	C CAPACITOR	100pF,50V
C314	PZEC-335738	C CAPACITOR	200pF,50V
C315	PZEC-315769	E CAPACITOR	10μF,16V
C316	PZEC-327373	C CAPACITOR	0.0082μF,50V
C317	PZEC-348351	MY CAPACITOR	0.015μF,50V
C318	PZEC-315777	E CAPACITOR	4.7μF,25V
C319	PZEC-348353	MY CAPACITOR	0.012μF,50V
C320	PZEC-684718	C CAPACITOR	0.01μF,50V
C321	PZEC-400933J	E CAPACITOR	0.33μF,50V
C322	PZEC-315770	E CAPACITOR	1μF,50V
C323	PZEC-315770	E CAPACITOR	1μF,50V
C324	PZEC-315772	E CAPACITOR	47μF,50V
C325	PZEC-315782	E CAPACITOR	22μF,10V
C326	PZEC-323873	C CAPACITOR	0.0015μF,50V
C327	PZEC-335796	C CAPACITOR	0.0033μF,50V
C328	PZEC-348324	MY CAPACITOR	0.0082μF,50V
C329	PZEC-315770	E CAPACITOR	1μF,50V
C330	PZEC-307555	E CAPACITOR	47μF,10V
C331	PZEC-684718	C CAPACITOR	0.01μF,50V
C332	PZEC-328554	E CAPACITOR	1μF,50V
C401	PZEC-684718	C CAPACITOR	0.01μF,50V
C402	PZEC-347985	MY CAPACITOR	0.0033μF,50V
C403	PZEC-323888	MMY CAPACITOR	0.033μF,50V
C404	PZEC-323888	MMY CAPACITOR	0.033μF,50V
C405	PZEC-327142	C CAPACITOR	0.0047μF,50V
C406	PZEC-327373	C CAPACITOR	0.0082μF,50V
C407	PZEC-389954J	E CAPACITOR	4.7μF,35V
C408	PZEC-315770	E CAPACITOR	1μF,50V
C409	PZEC-392745J	E CAPACITOR	2.2μF,50V
C410	PZEC-327142	C CAPACITOR	0.0047μF,50V
C411	PZEC-400811J	E CAPACITOR	33μF,6.3V
C412	PZEC-315777	E CAPACITOR	4.7μF,25V
C413	PZEC-315770	E CAPACITOR	1μF,50V
C414	PZEC-338574	MY CAPACITOR	0.022μF,50V
C415	PZEC-316244	E CAPACITOR	47μF,16V
C416	PZEC-684718	C CAPACITOR	0.01μF,50V
C417	PZEC-315770	E CAPACITOR	1μF,50V
C418	PZEC-307779	C CAPACITOR	0.022μF,50V
C419	PZEC-315770	E CAPACITOR	1μF,50V
C420	PZEC-357476	C CAPACITOR	0.01μF,16V
C421	PZEC-307779	C CAPACITOR	0.022μF,50V
C422	PZEC-315780	E CAPACITOR	22μF,25V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
C423	PZEC-335754	C CAPACITOR	22pF,50V
C424	PZEC-323521	C CAPACITOR	30pF,50V
C425	PZEC-348324	MY CAPACITOR	0.0082μF,50V
C426	PZEC-340008	MMY CAPACITOR	0.082μF,50V
C427	PZEC-315770	E CAPACITOR	1μF,50V
C428	PZEC-325304	C CAPACITOR	470pF,50V
C429	PZEC-315770	E CAPACITOR	1μF,50V
C430	PZEC-307779	C CAPACITOR	0.022μF,50V
C431	PZEC-315770	E CAPACITOR	1μF,50V
C432	PZEC-315770	E CAPACITOR	1μF,50V
C433	PZEC-684718	C CAPACITOR	0.01μF,50V
C434	PZEC-315770	E CAPACITOR	1μF,50V
C435	PZEC-316793	E CAPACITOR	47μF,6.3V
C436	PZEC-316793	E CAPACITOR	47μF,6.3V
C437	PZEC-316242	E CAPACITOR	2.2μF,50V
C438	PZEC-316242	E CAPACITOR	2.2μF,50V
C439	PZEC-684718	C CAPACITOR	0.01μF,50V
C440	PZEC-327140	C CAPACITOR	0.0022μF,50V
C441	PZEC-316793	E CAPACITOR	47μF,6.3V
C442	PZEC-316793	E CAPACITOR	47μF,6.3V
C443	PZEC-316242	E CAPACITOR	2.2μF,50V
C444	PZEC-316793	E CAPACITOR	47μF,6.3V
C445	PZEC-684718	C CAPACITOR	0.01μF,50V
C446	PZEC-684718	C CAPACITOR	0.01μF,50V
C447	PZEC-307779	C CAPACITOR	0.022μF,50V
C448	PZEC-684718	C CAPACITOR	0.01μF,50V
C449	PZEC-307779	C CAPACITOR	0.022μF,50V
C450	PZEC-316793	E CAPACITOR	47μF,6.3V
C451	PZEC-684718	C CAPACITOR	0.01μF,50V
C452	PZEC-305141	MMY CAPACITOR	0.22μF,50V
C453	PZEC-684718	C CAPACITOR	0.01μF,50V
C454	PZEC-684718	C CAPACITOR	0.01μF,50V
C455	PZEC-305138	MMY CAPACITOR	0.68μF,50V
L301	PZEO-717992	COIL	10mH
L302	PZEO-732647J	COIL	2.7mH
L401	PZEO-376611	COIL	47μH
L402	PZEO-376600	COIL	100μH
P301	PZEJ-362186	PLUG	4P
P302	PZEJ-371936	PLUG	2P
P303	PZEJ-371936	PLUG	2P
P401	PZEJ-733065J	SOCKET	6P
P402	PZEJ-733061J	SOCKET	8P
P403	PZEJ-371936	PLUG	2P
P404	PZEJ-733063J	SOCKET	13P
P405	PZEJ-733062J	SOCKET	12P
P406	PZEJ-364962	PLUG	5P
T301	PZEO-730665J	OSC BLK	
X401	PZEI-389640J	OSC X'TAL	8000KHz

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
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P.O.P BLOCK < 02 >

PWBA	PZBA-VA032A750D	P.O.P P.C. BOARD ASSY	

— PRE AMP P.C. BOARD SECTION —

IC1	PZEI-387598J	IC	
Q1	PZET-353899	TRANSISTOR	
Q2	PZET-397160J	TRANSISTOR	
Q3	PZET-397160J	TRANSISTOR	
Q4	DTC144ES	TRANSISTOR	
Q5	PZET-397160J	TRANSISTOR	
Q6	PZET-397160J	TRANSISTOR	
Q7	PZET-353899	TRANSISTOR	
Q8	PZET-353899	TRANSISTOR	
Q9	DTA144TS	TRANSISTOR	
Q10	PZET-397160J	TRANSISTOR	
Q11	DTC144ES	TRANSISTOR	
Q12	DTC143TS	TRANSISTOR	
D1	1SS131	SILICON DIODE	
R1	PZER-733047J	C RESISTOR	910Ω,1/4W
R2	PZER-733012J	C RESISTOR	1KΩ,1/4W
R3	PZER-733045J	C RESISTOR	750Ω,1/4W
R4	PZER-733009J	C RESISTOR	560Ω,1/4W
R5	PZER-732996J	C RESISTOR	10Ω,1/4W
R6	PZER-733012J	C RESISTOR	1KΩ,1/4W
R7	PZER-732997J	C RESISTOR	33Ω,1/4W
R8	PZER-733014J	C RESISTOR	1.5KΩ,1/4W
R9	PZER-733010J	C RESISTOR	680Ω,1/4W
R10	PZER-733012J	C RESISTOR	1KΩ,1/4W
R11	PZER-733009J	C RESISTOR	560Ω,1/4W
R12	PZER-733012J	C RESISTOR	1KΩ,1/4W
R13	PZER-733037J	C RESISTOR	240Ω,1/4W
R14	PZER-733012J	C RESISTOR	1KΩ,1/4W
R15	PZER-733012J	C RESISTOR	1KΩ,1/4W
R16	PZER-733009J	C RESISTOR	560Ω,1/4W
R17	PZER-733014J	C RESISTOR	1.5KΩ,1/4W
R18	PZER-733005J	C RESISTOR	270Ω,1/4W
R19	PZER-732997J	C RESISTOR	33Ω,1/4W
R20	PZER-733006J	C RESISTOR	330Ω,1/4W
R21	PZER-733015J	C RESISTOR	1.8KΩ,1/4W
R22	PZER-733023J	C RESISTOR	8.2KΩ,1/4W
R23	PZER-733016J	C RESISTOR	2.2KΩ,1/4W
R24	PZER-733005J	C RESISTOR	270Ω,1/4W
R25	PZER-733025J	C RESISTOR	12KΩ,1/4W
R26	PZER-733044J	C RESISTOR	470KΩ,1/4W
R27	PZER-733014J	C RESISTOR	1.5KΩ,1/4W
R28	PZER-733020J	C RESISTOR	4.7KΩ,1/4W
R29	PZER-733020J	C RESISTOR	4.7KΩ,1/4W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R30	PZER-733047J	C RESISTOR	910Ω,1/4W
VR1	PZEV-732497J	V RESISTOR,REC-Y	1KΩ
VR2	PZEV-732498J	V RESISTOR,REC-CHROMA	470Ω
C1	PZEC-357476	C CAPACITOR	0.01μF,16V
C2	PZEC-328554	E CAPACITOR	1μF,50V
C3	PZEC-325518	C CAPACITOR	0.001μF,50V
C4	PZEC-347832	C CAPACITOR	0.1μF,25V
C5	PZEC-335733	C CAPACITOR	75pF,50V
C6	PZEC-330334	C CAPACITOR	62pF,50V
C7	PZEC-347832	C CAPACITOR	0.1μF,25V
C8	PZEC-325518	C CAPACITOR	0.001μF,50V
C9	PZEC-328554	E CAPACITOR	1μF,50V
C10	PZEC-328554	E CAPACITOR	1μF,50V
C11	PZEC-347832	C CAPACITOR	0.1μF,25V
C12	PZEC-322033	C CAPACITOR	47pF,50V
C13	PZEC-330334	C CAPACITOR	62pF,50V
C14	PZEC-330116	C CAPACITOR	24pF,50V
C15	PZEC-322028	C CAPACITOR	100pF,50V
C16	PZEC-357476	C CAPACITOR	0.01μF,16V
C17	PZEC-357476	C CAPACITOR	0.01μF,16V
C18	PZEC-316793	E CAPACITOR	47μF,6.3V
C19	PZEC-200532	E CAPACITOR	0.33μF,50V
C20	PZEC-200510	E CAPACITOR	47μF,6.3V
C21	PZEC-357476	C CAPACITOR	0.01μF,16V
C22	PZEC-357476	C CAPACITOR	0.01μF,16V
C23	PZEC-315772	E CAPACITOR	47μF,10V
C24	PZEC-357476	C CAPACITOR	0.01μF,16V
C25	PZEC-335736	C CAPACITOR	130pF,50V
C26	PZEC-322035	C CAPACITOR	120pF,50V
C27	PZEC-357476	C CAPACITOR	0.01μF,16V
C28	PZEC-357476	C CAPACITOR	0.01μF,16V
C29	PZEC-357476	C CAPACITOR	0.01μF,16V
C30	PZEC-340005	MMY CAPACITOR	0.047μF,50V
C31	PZEC-200488	C CAPACITOR	56pF,50V
C32	PZEC-322036	C CAPACITOR	180pF,50V
C33	PZEC-322837	C CAPACITOR	12pF,50V
C34	PZEC-357476	C CAPACITOR	0.01μF,16V
C35	PZEC-200806	C CAPACITOR	33pF,50V
C36	PZEC-346218	E CAPACITOR	0.33μF,50V
C37	PZEC-316793	E CAPACITOR	47μF,6.3V
C38	PZEC-357476	C CAPACITOR	0.01μF,16V
C39	PZEC-322033	C CAPACITOR	47pF,50V
C40	PZEC-322509	C CAPACITOR	18pF,50V
C41	PZEC-322509	C CAPACITOR	18pF,50V
C42	PZEC-322035	C CAPACITOR	120pF,50V
C43	PZEC-335737	C CAPACITOR	160pF,50V
C44	PZEC-357476	C CAPACITOR	0.01μF,16V
C45	PZEC-357476	C CAPACITOR	0.01μF,16V
C46	PZEC-200510	E CAPACITOR	47μF,6.3V
L1	PZEO-353589	COIL	5.6μH
L2	PZEO-376611	COIL	47μH
L3	PZEO-360555	COIL	18μH
L4	PZEO-345887	COIL	220μH
L5	PZEO-732646J	COIL	100μH
L6	PZEO-732646J	COIL	100μH
L7	PZEO-392791J	COIL	150μH
L8	PZEO-353902	COIL	68μH
L9	PZEO-351860	COIL	8.2μH
L10	PZEO-376603	COIL	15μH
L11	PZEO-376860	COIL	82μH
L12	PZEO-732646J	COIL	100μH
L13	PZEO-376606	COIL	18μH
P1	PZEJ-733064J	SOCKET	6P
P2	PZEJ-733062J	SOCKET	12P

— OPERATION P.C. BOARD SECTION —

D801	PZED-730668J	LED,STBY/POWER	RED
D802	PZED-732495J	LED,REPEAT	RED
D803	PZED-732495J	LED,REC	RED
D804	PZED-732494J	LED,PLAY	GREEN
D805	PZED-732495J	LED,REW	RED
D806	PZED-732495J	LED,CENTER	RED
D807	PZED-732495J	LED,FF	RED
R801	PZER-733016J	C RESISTOR	2.2KΩ,1/4W
R802	PZER-733040J	C RESISTOR	360Ω,1/4W
R803	PZER-733041J	C RESISTOR	510Ω,1/4W
R804	PZER-733045J	C RESISTOR	750Ω,1/4W
R805	PZER-733048J	C RESISTOR	1.3KΩ,1/4W
R806	PZER-733017J	C RESISTOR	2.7KΩ,1/4W
R807	PZER-733052J	C RESISTOR	7.5KΩ,1/4W
R808	PZER-733002J	C RESISTOR	150Ω,1/4W
R809	PZER-733035J	C RESISTOR	200Ω,1/4W
R810	PZER-733035J	C RESISTOR	200Ω,1/4W
R811	PZER-733002J	C RESISTOR	150Ω,1/4W
R812	PZER-733035J	C RESISTOR	200Ω,1/4W
R813	PZER-733035J	C RESISTOR	200Ω,1/4W
R814	PZER-733035J	C RESISTOR	200Ω,1/4W
R815	PZER-733035J	C RESISTOR	200Ω,1/4W
C801	PZEC-357479	E CAPACITOR	100μF,6.3V
C802	PZEC-357476	C CAPACITOR	0.01μF,16V
C803	PZEC-357479	E CAPACITOR	100μF,6.3V
C804	PZEC-357476	C CAPACITOR	0.01 μF,16V
L801	PZEO-376600	COIL	100μH

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	SW801	PZES-732849J	TACT SW,POWER	
	SW802	PZES-732849J	TACT SW,REC	
	SW803	PZES-732849J	TACT SW,STOP/EJECT	
	SW804	PZES-732849J	TACT SW,PLAY	
	SW805	PZES-732849J	TACT SW,STILL/PAUSE	
	SW806	PZES-732849J	TACT SW,REW	
	SW807	PZES-732849J	TACT SW,FF	
	P801	PZEJ-733062J	SOCKET	12P
	Z801	PZET-732496J	DETECTOR	GP1U561

— POWER P.C. BOARD SECITON —

	IC901	PZEI-732862J	IC	
	IC902	PZEI-732863J	IC	
	Q901	PZET-732861J	TRANSISTOR	
⚠	D901	S1WB(A) 60	SILICON DIODE	
	D902	PZED-732854J	SILICON DIODE	
	D903	PZED-732856J	SILICON DIODE	
	D904	PZED-732857J	SILICON DIODE	
	D905	AU01Z	SILICON DIODE	
	D906	AU01Z	SILICON DIODE	
	D907	PZED-732859J	SILICON DIODE	
	D908	PZED-732860J	SILICON DIODE	
	D909	PZED-732859J	SILICON DIODE	
	R902	PZER-733058J	CT RESISTOR	2.2Ω,2W
	R903	PZER-733059J	MF RESISTOR	240KΩ,1/2W
	R904	PZER-733059J	MF RESISTOR	240KΩ,1/2W
	R905	PZER-733060J	MF RESISTOR	47KΩ,3W
	R906	PZER-732850J	MF RESISTOR	0.47Ω,2W
	R907	PZER-315961	OMF RESISTOR	27Ω,2W
	R908	PZER-333119	OMF RESISTOR	56Ω,2W
	R909	PZER-201840	C RESISTOR	1.5Ω,1/4W
	R910	PZER-733012J	C RESISTOR	1KΩ,1/4W
	R911	PZER-733012J	C RESISTOR	1KΩ,1/4W
⚠	R912	PZER-730134J	FUSE RESISTOR	0.22Ω
⚠	R913	PZER-730134J	FUSE RESISTOR	0.22Ω
⚠	R914	PZER-732851J	FUSE RESISTOR	0.33Ω
	R915	PZER-733045J	C RESISTOR	750Ω,1/4W
	R916	PZER-733016J	C RESISTOR	2.2KΩ,1/4W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
⚠	C901	PZEC-733066J	LFX CAPACITOR	0.047μF
⚠	C902	PZEC-733067J	LFX CAPACITOR	0.068μF
⚠	C903	PZEC-365543	C CAPACITOR	0.0022μF,400AC
⚠	C904	PZEC-365543	C CAPACITOR	0.0022μF,400AC
⚠	C905	PZEC-365543	C CAPACITOR	0.0022μF,400AC
	C906	PZEC-732852J	E CAPACITOR	100μF,400V
	C907	PZEC-733068J	PP CAPACITOR	0.047μF
	C908	PZEC-733069J	C CAPACITOR	220pF
	C909	PZEC-733070J	E CAPACITOR	47μF,35V
	C910	PZEC-338573	MY CAPACITOR	0.01μF,50V
	C911	PZEC-733070J	E CAPACITOR	47μF,35V
	C912	PZEC-404196J	E CAPACITOR	1000μF,35V
	C913	PZEC-733071J	E CAPACITOR	470μF,25V
	C914	PZEC-733072J	E CAPACITOR	680μF,16V
	C915	PZEC-316793	E CAPACITOR	47μF,6.3V
	C916	PZEC-315772	E CAPACITOR	47μF,10V
	C917	PZEC-315796	E CAPACITOR	47μF,25V
	C918	PZEC-315796	E CAPACITOR	47μF,25V
	C919	PZEC-316244	E CAPACITOR	47μF,16V
⚠	C920	PZEC-365543	C CAPACITOR	0.0022μF,400AC
⚠	C921	PZEC-365543	C CAPACITOR	0.0022μF,400AC
⚠	FL901	PZEO-732865J	COIL	
⚠	F901	PZEF-364518	FUSE	2.50A,250V
⚠	F-CLP	PZEZ-394715J	FUSE HOLDER	5.2MM (FUSE CLIP)
	P901	PZEJ-364344	PLUG	5P
⚠	T901	PZEO-732864J	TRANS	
⚠	SKT1	PZEJ-732867J	SOCKET INLET	(AC INLET)